General Session

Special Session
Approaches to the Syntax-Phonology Interface

Parasessions
Semantic Theory in Underdescribed Languages
Language, Inequality, and Globalization

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Foreword

This monograph contains 28 of the 51 talks given at the 40th Annual Meeting of the Berkeley Linguistics Society, held in Berkeley, California, February 7-9, 2014. The conference included a General Session, one Special Session entitled *Approaches to the Syntax-Phonology Interface*, and two Parasessions entitled *Semantic Theory in Underdescribed Languages* and *Language, Inequality, and Globalization*. It was planned and run by all then second-year graduate students in the Department of Linguistics at the University of California, Berkeley. The members of the Executive Committee were Sarah Bakst, Herman Leung, Auburn Lutzross, Jonathan Manker, Zachary O’Hagan, Orchid Pusey, Nicholas Rolle, and Katie Sardinha.

The papers contained herein were, upon first submission, edited principally for style by members of the Executive Committee. These edited versions were incorporated by Herman Leung and Zachary O’Hagan into a draft manuscript that was circulated among authors either for their approval or for further editing. Following resubmission, final versions of papers were incorporated by Zachary O’Hagan into the monograph found here. Our goal has been the speedy publication of these proceedings, and as such, certain aspects – e.g., the complete unification of formatting – have been sacrificed. It is our belief that this does not detract from the final publication in any way.

The Executive Committee
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Weak Crossover and the Syntax-Phonology Interface

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1 Introduction

Postal (1971) shows that when a wh-operator is fronted over a position containing a pronoun, the pronoun cannot be understood as a variable bound by the crossing operator. Consider the contrast in (1).

(1) a. Who₁ does his ₁/₂ mother love t₁?
   b. Who₁ t₁ loves his₁ mother?

In languages like English, a subject wh-phrase cannot possibly cross over a pronoun inside an object DP, when fronted, as subjects are structurally higher than objects to begin with. Thus, in (1b) who has not crossed over the object DP containing the pronoun his. (1b) can be understood as a question about the identity of the person x, such that x loves x’s mother. In that reading of the sentence, the pronoun is undeniably interpreted as a bound variable, given that its value covaries with that of the wh-phrase. Postal’s observation is that whereas the bound variable interpretation (BVI) of the pronoun is available in examples like (1b), the pronoun cannot be so interpreted in (1a). That the BVI of the pronoun is the problem in (1a) is shown by the fact that the sentence is acceptable under a deictic interpretation of the pronoun.

Postal (1971) refers to the data exemplified in (1) as crossover phenomena. Later, Wasow 1979 shows that the deviance found in crossover sentences is greater when the pronoun c-commands the gap than when it doesn’t. This is shown in (2).

(2) a. *Who₁ does he₁ love t₁?
   b. ?*Who₁ does his₁ mother love t₁?

(2a) is worse than (2b). Wasow used the terms strong crossover (SCO) and weak crossover (WCO) as mnemonic terms for the greater deviance of sentences like (2a) with respect to examples like (2b). Since SCO phenomena has been shown in various analyses to violate the intersection of the crossover principle (whatever it is) and other principles of grammar (e.g., Binding Condition C), in the remaining of this article I will only discus WCO phenomena.

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1 I thank the audience at the 40th Annual Meeting of the Berkeley Linguistic Society for their questions and comments.
2 Previous Accounts

Chomsky (1976), assuming a rule of Quantifier Raising (QR), later defended in May 1977, points out that the structures of sentences like (1) are entirely parallel to the structure of examples like (3), once the quantifier is raised by QR at the linguistic level of Logical Form (LF), as shown in (4).

(3) a. ?*His mother₁ loves every boy₁.
    b. Every boy₁ loves his₁ mother.

(4) a. [Every boy₁ [[his₁ mother₂] [ t₂ loves t₁]]]
    b. [Every boy₁ [ t₁ loves [his₁ mother]]]

(4a-b) are respectively parallel to (1a-b). Given such parallelism, Chomsky (1976) proposes that the impossibility of the bound variable interpretation of the pronoun in examples like (3a) should follow from whatever principle bans that interpretation in examples like (1a), since both types of examples have essentially the same LFs, namely those in 4, once irrelevant factors are ignored. He proposes the Leftness Condition, which can be stated as in (5).

(5) **Leftness Condition (LC):**

A pronoun cannot be linked to a variable to its right.

According to the LC, the problem in structures like (4a) is that the pronoun is linked (*coindexed*) with the trace t₁, the variable bound by the operator. Since the trace (i.e. the variable) is to the right of the pronoun, the LC prevents the pronoun from depending of the operator associated with the variable. The LC account of WCO faces both empirical and conceptual problems. I will not review the empirical issues here.

On the conceptual front, a working assumption within generative models of human language has been that in the sub-systems of language dealing with structure-building and semantic interpretation, what Chomsky (1993, 1995) respectively calls the computational system (CHL) and the conceptual intensional (CI) interface, precedence does not play a role. For those components, hierarchy has been shown to be the relevant relation. If so, why should a precedence-sensitive constrain like the LC determine interpretation, a phenomenon of the CI interface?

Reinhart (1976, 1983) argues that C-command, and not linear precedence, is the relevant factor determining the distribution of bound pronouns. She argues that pronominal binding is subject to a syntactic condition that can be called the A-binding condition, and which can be stated as in (6).
A pronoun can only be bound from an A-position.

A-positions are those positions where arguments of predicates receive their α-roles or check case or agreement features. A-binding predicts correctly that the pronoun in (4a), corresponding to (3a), cannot be bound by the universal quantifier, given that the latter is a non-argument or Ā-position. The same analysis applies mutatis mutandis to the ungrammaticality of (1a), whose LF is identical to (4b), with who in the position of every boy.

The A-binding approach is conceptually more appealing than the LC, since it does away with the precedence relation, which is not expected to play a role in structure-building or in semantic interpretation. It is perhaps for its conceptual appeal that this approach has become very influential. In fact, most theories of WCO that followed the publication of Reinhart’s work (i.e., Reinhart 1976; 1983) have incorporated the A-binding insight in one way or another. For instance, Koopman and Sportiche (1983) assume that pronouns bound by phrases in A-positions do not qualify as variables. They then propose the Bijection Principle (BP), a condition preventing A-bar operators from binding more than one variable. The combination of their assumption about the status of pronouns coindexed with A-binders and the BP effectively rules out pronominal-binding scenarios that do not involve A-binding.

Examples of other approaches implementing the A-binding insight include the analyses of Lasnik and Stowell (1991), Jacobson (1999) Ruys (2000), Buring (2004), Schlenker (2004), and Shan and Barker (2006). Bianchi (2001) and Safir (2004) implement the insight in terms of an anti-C-command condition. According to these authors, a constituent depending on a variable or containing a constituent that depends on a variable cannot asymmetrically c-command the given variable.

The common property of these approaches is that they are local in the sense of assuming that the violation resulting in the WCO effect occurs in a local region of the language system (e.g., narrow syntax or the semantic component). Thus, about half of the approaches mentioned in the previous paragraph assume that the WCO effect is a violation of syntax (e.g., Reinhart 1979, 1983; Koopman and Sportiche 1983; Lasnik and Stowell 1991; Bianchi 2001 and Safir 2004), whereas the remaining analyses assume that the relevant violation is semantic (e.g., Jacobson 1999; Ruys 2000; Buring 2004; Schlenker 2004; and Shan and Barker 2006).

A general problem of local approaches in the sense intended in the previous paragraph is that they are too limited in scope. Since the derivation of linguistic expressions involves at least four different components of the language faculty (e.g., the lexicon, the computational system, and the sensorimotor and conceptual intensional interfaces), it is conceivable that a phenomenon that might appear to be local, prima facie, might in the end be the cumulative result of the way in which the four previous components interact during the derivational process. But local constraints, because of their locality, cannot exploit a potential division of labor between the different language components in producing a given phenomenon. Now, since the components of the language faculty do not interact in a random way, it must be the case that there are
constraints determining exactly how such an interaction proceeds. More importantly, any constraint determining how the components of human language interact are necessarily constrains on the shape of linguistic expressions. Following Chomsky (2005), I will call a condition an architectural constraint if the given condition results from the way the $C_{HL}$ maps linguistic expressions, assembled from lexical items, to the interfaces.

Architectural constraints are empirically and conceptually superior to local constraints. Conceptually, architectural constraints instantiate principles of good design that are independent of human language and expected of other subsystems embedded in biological systems, hence such principles need not be attributed to UG. The use of architectural constraints therefore helps achieve the current minimalist goal of reducing UG in order to facilitate the eventual study of the evolution of language. By contrast, local constraints are usually stated in terms of language specific condition. The problem is that since human language seems to be isolated in the biological world, language specific constraints must be attributed to our genetic endowment responsible for language (i.e. UG), hence the use of such constraint goes against general minimalist goals.

Empirically, local constraints are not suitable for capturing linguistic variation within a single language or crosslinguistically. The standard view of linguistic variation is that the component of the language faculty that is responsible for variation is the lexicon. But local constraints, in order to achieve the degree of generality demanded by a generalization, cannot be stated in terms of lexical items, hence any lexical induced variations will be difficult to accommodate in analysis employing such constraints.

3 Local Accounts of WCO in the Face of Two Paradoxes.

In this section, I show that the accounts of WCO discussed above face at least two different paradoxes regarding their predictions concerning the crosslinguistic distribution of the WCO effect. The relevant paradoxes are the null-overt (NO) paradox, and the determiner-adjective (DA) paradox. I discuss the first of these paradoxes next.

3.1 The Null-overt Paradox

Although a fronted operator cannot bind a pronoun in the subject position of a subject possessive DP, as illustrated in (1a), repeated for convenience as (7), it can certainly do so if the pronoun is null. This is shown in (8) with data from Hungarian. The data is from Kiss (1987) as reported by Georgopolous (1991).

(7) Who$_1$ does his ?$^{1/2}$ mother love t$_1$?
In both of the examples in (8), the displaced operator binds a null pronoun inside the subject possessive DP pro anyja ‘his mother’. Native speakers of Hungarian interpret (8a) as a request for information about the identity of the person x, such that x’s mother loves x. This is the BVI of the pronoun; precisely the reading that is missing in the English gloss.

The existence of examples like those in (8) and their English counterparts constitutes a paradoxical state of affairs for local accounts of the WCO effect. The problem is that whatever local condition accounts for the presence of the WCO effect in the example in (7), will not extend to cover the absence of the effect in (8) and vice-versa.

The data in (8) cannot simply be dismissed as reflecting an idiosyncratic property of Hungarian: the pattern of null-pronouns escaping the WCO effect is crosslinguistically robust. Van Valin (1987) shows that in head-marking languages, where it is possible to drop a possessive pronoun on the basis of agreement with the head of the possessive DP, the WCO effect disappears with the null pronouns. His example below illustrates the matter perspicuously.

(9) Ø-tha-khóla-ku    ki    twá    wąyąka   he?
3-POSS-friend-POSS  the  who  3sg.see.3sg  Q
‘Who did his friend see?’

The absence of WCO with null pronouns cannot be dismissed as a typologically idiosyncratic property either. It cannot be the case that the WCO effect is somehow suspended in languages with null pronouns, given that phonetically empty pronouns escape the WCO constraint even in languages that allow both overt and null pronouns. Higginbotham’s (1980) pro-gate phenomenon shows that this is the case in English. Consider the contrast in (10), modeled after similar examples in Agüero-Bautista (2012).

(10) a. ?*Who₁ did [his₁ crashing a car] get t₁ fired?
    b. Who₁ did [his₂ crashing a car] get t₁ fired?
    c. Who₁ did [PRO₁ crashing a car] get t₁ fired?

(10a) shows the classical WCO effect in English. (10b) is a control example, showing that an overt pronoun can occur as the subject of a deverbal gerundive nominal, provided that the pronoun receives a contextually determined value or deictic interpretation. The grammaticality of (10b) in that interpretation shows that there is no problem with the structure of (10a), since that
structure is identical to that of (10b). Rather, the problem with the former example must be the bound variable interpretation of the overt pronoun, which is not possible in a WCO configuration as expected. (10c) is the interesting example, showing that, even in English, a null pronoun can have a bound variable reading in precisely the same WCO-offending configuration of (10a).

Despite the overwhelming crosslinguistic evidence suggesting that null pronouns must in fact be immune to WCO, Safir (2006) has claimed that a WCO effect shows up in the distribution of the null element pro in Spanish. He discusses the example in (11).

(11) *A quien pro dijiste que [la mujer con quien pro habló t] impresiona t
to who (you) said that the woman with which (he) spoke impressed
‘Who did you say that [the woman with whom he spoke] impressed’

A closer look at (11), however, reveals that the deviance of that example might be due to factors not related to WCO. First, the Spanish predicate decir is ambiguous, meaning either ‘say’ or ‘tell’. Like English ‘say’, decir can take just a direct clausal complement. However, decir can also take an indirect object beside its direct clausal complement. With that argument structure, decir is more like English ‘tell’ in sentences like Dije a Juan que Susan había llegado ‘I told Juan that Susan had arrived.’ Given this possibility, after the wh-operator is processed and the predicate decir is encountered, the speaker might naturally tend to posit a gap in the direct object position of decir to be filled with the fronted wh-operator. In such a parse, decir is treated as the equivalent of tell. That parse, however, leads to a dead end, since now there is no wh-phrase to fill the gap in the embedded clause. What this means is that (11) is simply a complex garden-path sentence, taxing the processing abilities of the speaker. In order to control for the garden path factor, decir should be replaced by an unambiguous predicate like pensar ‘think’, which takes a (single) a clausal complement.

A second problem with (11) is that the subject of the embedded clause is not inverted, although, as shown by Torrego (1984), extraction of argument wh-phrases in Spanish triggers obligatory inversion in every clause that the wh-operator goes through on its way to its landing site.

Interestingly, when the inversion and the garden path problems are taken care of, the deviance associated with (11) disappears.

(12) A quién pro piensas que impresionó [la mujer con quien pro habló t] t
to who (you) think that impressed the woman with whom (he) spoke
‘Who do you think that [the woman with whom he spoke] impressed’

(12) is perfectly fine, although a little difficult to interpret out of context. Comprehension of the sentence is facilitated if one adds a continuation like todo el día ‘the entire day’ at the end of the bracketed constituent. (13), with more contextual information, clearly shows that pro can have a bound variable interpretation in the configuration of (11).
(13) A que escritor₁ pro piensas que deshonró [la novela mediocre₂ que pro₁ publicó t₂ (después de la obra maestra)] t₁?
(To which writer₁ (you) think that disgraced [the novel mediocre₂ that he₁ published t₂ (after his₁ masterpiece)] t₁?)

‘Which writer₁ do you think that [the mediocre novel₂ he₁ published t₂ (after his₁ masterpiece)] disgraced t₁?’

(13) is fine despite the fact that the wh-operator has been fronted over a DP containing a relative clause dominating the pronoun bound by the operator. (13) allows answers of the form X, if X is a personal name referring to an individual who has in fact been acknowledged for writing a masterpiece and the same individual is later disgraced by writing a mediocre novel.

In retrospect, it is not clear if examples with the structure of (11) should yield a WCO effect. For reasons that are not well understood (but see section ?? below), operators can cross over pronouns contained inside relative clauses without triggering a WCO effect. Witness the acceptability of (14).

(14) Who₁ did [the fact that he₁ came from Arkansas] help t₁ become the 42nd president?

Answer: Bill Clinton.

What we have seen, then, is that Safir’s (2006) data do not constitute a counterexample to the generalization that null pronouns, as opposed to overt ones, escape the WCO effect in the classical WCO-offending configuration. On the one hand, the grammaticality of the Spanish examples in (12)-(13), shows that WCO effect is not present in those examples despite the fact that the null element pro is bound by the crossing wh-phrase. On the other hand, the grammaticality of (14) renders Safir’s data irrelevant, given that WCO disappears in similar complex structures in English as well.

The relevant examples are those in (7) to (9), where the pronouns are the subject of the possessive DP in subject position of the clause. As we saw above, when the pronoun is overt a WCO effect arises in such a context. However, when the pronoun is null, the WCO effect disappears. Since the structures containing the null pronouns are identical to those containing the overt ones, these data constitute a paradoxical state of affair for local theories of the WCO effect, as any account of the phenomenon based on structural properties will necessarily miss one of the two sets of data.

3.2 The Determiner-Adjective (DA) Paradox.

Although overt pronouns in English trigger the WCO effect in the classical crossover configuration of (1), in some languages, at least a sub-class of overt pronouns do not seem to yield the effect in well-known crossover environments. French seems to be such a language. Postal (1993), citing Martinon (1927), gives us the following example.
(15) Un homme à qui sa jambe fait mal

A man to whom his leg makes pain

‘A man whose leg hurts’

It is a well-known fact that relative clauses in English show the WCO effect when the relative operator crosses over a pronoun in subject position of a possessive DP (see e.g. Higginbotham 1980; Safir 1986, 2006; Lasnik and Saito 1991; Postal 1993). This is exactly the case of (15), yet, there is no WCO effect in that example. French is not alone in that respect: Spanish behaves similarly. Consider the example below.

(16) Ningún niño a quien su madre haya maltratado será aceptado sin examen psicológico.

‘No child who his mother has mistreated will be accepted without a psychological exam’

These examples do not just reflect a peculiar property of the relative clause construction in Romance. Parallel effects are found in questions. The French examples in (17) are from Postal (1993). The Spanish examples in (18) are my own.

(17) a. Quel homme crois-tu que sa mère a appelé?

What man do you think his mother called?

b. A quel homme crois-tu qu’ils ont présenté sa voisine?

Which man do you think that they introduced his female neighbor to?

(18) a. A qui pensez vous que sa madre acaba de llamar?

What man do you think that his mother just called?

b. A quien había pensado [su padre] PRO to enviar a rehabilitación.

‘Whom had thought [her father] PRO to send into rehab?’

The French question in (17a-b) and the Spanish one in (18a) are fully grammatical. These examples, however, must be taken with care in light of findings by Ishii (2006) and myself.
(Agüero-Bautista 2012) showing that when the possessive DP containing the pronoun is in an embedded clause and the crossing wh-phrase is in a higher one, the deviance associated with the WCO effect tends to disappear even in English, depending on several factors. For that reason, one should consider monoclausal examples, or biclusal examples like the Spanish one in (18b), where the possessive DP is the subject of the matrix clause, hence the pronoun and the fronted wh-phrase must be clause mates in such an environment. (18b) contrasts with its English gloss in being fully grammatical. The relative clause contexts in (15)-(16) and the Spanish interrogative in (18b) show that for some unknown reasons Romance possessive pronouns like French sa ‘his/her’ or Spanish su ‘his/her’ can have a BVI in WCO contexts, unlike what happens with their English counterparts.

Again, these data cannot be dismissed by assuming that WCO is entirely absent in French and Spanish. Some overt pronouns seem to trigger a WCO-like effect in the contexts exemplified in (15)-(18). For instance, one can replace the possessive DP su madre ‘his mother’ in (16), by the phrase la madre de él ‘his mother’ (literally: the mother of him), to yield (19).

(19)  Ningún niño(a quien la madre de él haya maltratado) será aceptado

‘No child who his mother has mistreated will be accepted without a psychological exam’

Unlike (16), (19) is deviant. That the deviance is caused by the binding of the pronoun by the quantifier is shown by the fact that the sentence becomes acceptable if él ‘him’ is interpreted as a free variable, for instance if it picks out as its value an individual that the speakers points at when uttering the sentence.

French behaves similarly, to the extent that we can construct relevant examples. For instance, in the Quebec dialect of French, it is possible to double a possessive pronoun inside a possessive DP with a normal regular pronoun following the possessive DP in expressions like sa femme à lui ‘his wife’ (literally: ‘his wife of him’). Consider the following contrast.

(20)  a. Quelle politicienne penses-tu que son mari à elle a trahi t1?

Which politician do you think that her husband betrayed t1

‘Which politician do you think that her husband betrayed t1’

b. Quelle politicienne penses-tu que son mari (*à elle) a trahi t1?

Which politician do you think that her husband (of her) has betrayed t1

‘Which politician do you think that her husband betrayed t1’

The pronoun doubling the possessive DP must get the same value as the possessive pronoun. (20a) shows that if the combination of the possessive pronoun and the double gets a deictic
value, the sentence is grammatical. When the possessive pronoun is bound by the crossing wh-
phrase, however, the sentence is grammatical if the double is omitted and ungrammatical otherwise. This indicates that the presence of the double is not compatible with the BVI of the possessive pronoun; suggesting that the overt pronominal double introduces a WCO-like effect that is not present when the possessive pronoun is bound in isolation. These data constitute another paradox for any local structural account of WCO phenomena. The problem is that any structural theory that explains the grammaticality of (16), for instance, will not be able to account for the ungrammaticality of the structurally similar (19). We are thus led to search for an alternative explanation for the WCO phenomena.

4 Proposal

The main idea of my proposal is that the WCO effect is a derivational violation of Kayne’s (1994) Linear Correspondence Axiom. The violation is derivational because different parts of the architecture of the language faculty conspire to yield the WCO effect. Even pre-theoretically, it is clear that the manifestation of the WCO effect is subject to lexical properties (only a subset of pronominal lexical items in an operator-variable relation triggers the effect), syntactic properties (only a subset of the possible structural configurations mediating an operator and a variable yield a WCO effect), phonological properties (only overt pronouns of a certain kind yield WCO) and semantic properties (the constraint only arises under the BVI). The challenge is to show how this complex of properties, found in the distribution of the WCO effect, follows from the way the CHL maps different lexical items to the interfaces.

4.1 The LCA in a Derivation by Phase Model.

Kayne (1994) shows that any ordered pair of non-terminal nodes A and B, in a given phrase marker M, such that A asymmetrically c-commands B, can be mapped unto an ordering in which the set of terminal nodes dominated by A precedes the set of terminal nodes dominated by B. His Linear Correspondence Axiom (LCA) is his proposal that this is the way in which hierarchical structure is mapped onto linear order. Kayne takes precedence to be the universal instantiation of linear order. The precedence relation is transitive (i.e., if xPy and yPz, then xPz), total (for all x, y; either xPy or yPx) and antisymmetric (i.e., not (xPy & yPx)). The LCA is then viewed as a well-formedness requirement on phrase markers: only phrase markers that can be mapped onto a linear ordering without violating any of the formal properties of the ordering relation (i.e. antisymmetry, totality and transitivity) are legitimate syntactic objects.

The minimalist program (MP), with its bare phrase structure technology (see Chomsky 1993, 1995) denies the existence of phrase markers as independent syntactic entities; hence the function of the LCA in a minimalist model of the grammar must be rethought. In the MP, syntactic objects are put together by recursive applications of the operation Merge. Thus, any antisymmetric properties exhibited by the objects so derived must be the results of the
inner workings of that operation. In effect, the main consequences of the LCA can be derived from the way Merge works in a multiple spell-out model of the grammar, provided that one assumes that violations of antisymmetry are not tolerated in any wing of the grammar where order matters (e.g., the articulatory-perceptual (AP) system). This is in fact the position taken by Chomsky (1995) and Uriagereka (1999), who assume that order is only required of the PF component, hence they further assume that LCA-like principles are restricted to the AP system. In this article, I argue that the procedure that evaluates compliance with antisymmetry is based on the agreement system. In particular, I argue that probes continuously search their domains for agreeing goals. If a goal is found, it is marked for erasure (E-marked) and must be deleted at spell-out or the derivation is cancelled, since its linearization would instantiate a violation of antisymmetry, as two sets of identical features (i.e., the agreeing features) would be linearized in two different syntactic positions. In order to survive erasure, a goal must be remerged in the first possible spot where it cannot be seen by the searching probe. In general, the first such “blind spot” will be the spec of the searching probe. I take a probe to be any functional lexical item heading a functional phrase. The search domain of a probe is just the c-command domain of the given probe as restricted by the phase impenetrability condition (PIC) of Chomsky (2001). An immediate consequence of this view of agreement is that it derives at once the fact that copies must be phonetically empty and that their antecedents must be in a spec-head agreement configuration. A second consequence is that it derives the WCO effect triggered by determiner pronouns, as we shall see in the following section.

4.2 Why Determiner Pronouns Trigger WCO

I assume that determiner pronouns require NP complements as all determiners do. Furthermore, I will assume that since the NP complement of a determiner pronoun is phonologically deleted, the information it conveys must be recovered from the (syntactic) context in which it appears, given the relevance of general conditions on the recoverability of information constraining deletion (cf. Elbourne 2001, 2005). Based on these facts, I argue that in the BVI of a determiner pronoun, the NP complement of the pronoun is a copy of the NP of the antecedent DP. How can the pronoun end up with a copy of the antecedent DP? A plausible scenario (and one that I will assume here) is that the pronoun and the determiner of the antecedent DP are *parallel-merged* with the same NP à la Citko (2005). If the process occurs before any phase head is merged, no violation of cyclicity or the Extension Condition will ensue. Under this view, the sentence in (21a) must go through the stage in (21b)

(21) a. Which man₁ does his₁ mother love t₁?
    b. Merge ∥which, man∥; Merge ∥he, man∥

At the stage in (21b) Merge applies in parallel to the pairs ∥which, man∥ and ∥he, man∥ creating the DPs *which man* and *he man* respectively. When the sentence is finally put together, its
ultimate representation looks like (22) where unpronounced copies are indicated with strikethrough font. I take the liberty to represent irrelevant copies as traces.

(22) [CP which man$_1$ [C’ does [IP [DP [DP he$_1$ \text{man}] [D’ ‘s mother]]$_2$ [vP t$_1$ t$_2$ love which-man$_1$]]]

The problem of (22) is that the pronoun spells out the \(\phi\)-features of its complement NP, but since its elided complement is a part of the antecedent, the set of \(\phi\)-features of the antecedent ends up linearized in two different positions: the site of the antecedent in Spec, CP, and the site of the pronoun in Spec of the subject possessive DP. When the probe \(C^0\) searches it domains for agreeing goals, it can see the pronoun in the same way that it can see the deleted copy of which man in the position of t$_1$ in (22). The copy of which man can be deleted, as the extra copy of that DP in Spec, CP makes the structure comply with the condition on the recoverability of information constraining ellipsis. However, no such condition can be met in the case of the pronoun, as there is just a single copy of this item in (22). Deletion, therefore, cannot take place and the example inevitably violates antisymmetry, hence it is unacceptable.

Crucially, in (22) the pronoun is in the search domain of the agreeing probe, the \(C^0\) that agrees with the antecedent and by transitivity with the pronoun. This is because no intervening phase head is located between the pronoun and the antecedent.$^2$ This analysis predicts that if the pronoun were embedded under a phase head, the probe could not “see it” (reach it) and the resulting example should be fully grammatical even on the phase of agreement. This prediction is borne out: witness the grammaticality of examples like (1b), repeated here as (23a), with the structure in (23b).

(23) a. Who$_1$ t$_1$ loves his$_1$ mother?

b. [CP who C’ [IP who [vP who [v’ v [DP [DP he person]’s mother]]]]]

In the structure in (23b), \(C^0\) cannot see the pronominal DP, as the latter is encapsulated within the vP phase. In other words, the pronoun in the structure in (23b), corresponding to the sentence in (23a), is not in the search domain of the agreeing probe. Although it agrees with the probe, it

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occurs in a “blind spot,” hence the grammar has not basis for E-marking the structure. Thus, the acceptability of such examples follows naturally.

4.3 Solving the Null-Overt Paradox.

The present analysis solves the puzzle of why null pronouns do not trigger the WCO effect. The answer is an immediate consequence of this account: null pronouns do not trigger the WCO effect because they are lexically null, hence they trivially comply with the requirement of E-marking. Nothing more needs to be said about such cases. Notice that this analysis predicts that if phonological deletion of a determiner pronoun is somehow possible, in a WCO configuration (e.g., because the requirement on the recoverability of deleted material is somehow met), the bound variable interpretation of the pronoun should be possible. This prediction is in fact borne out. Consider the examples in (24a), from Williams (1994), and those in (24b-c) modeled after (24a).

(24) a. His town major executed a friend of mine.
   b. ?*His town major executed a friend of mine, but I don’t know exactly who₁ his₁ town
      major executed.
   c. His town major executed a friend of mine, but I don’t know exactly who₁ his₁ town-
      major executed.

Williams notes that (24a) is a possible case of backward anaphora, provided that the indefinite receives a very specific interpretation. Fodor and Sag (1982) and researchers working within the discourse representation framework (e.g., Heim 1982, Kamp 1981) have assumed that indefinites could be referential entities, so the grammaticality of (24a) could follow from an interpretation of the pronoun via a strategy other than the BVI, hence the WCO constraint would be irrelevant. Both (24b-c) could occur naturally under a phrase like I heard that. In such a context, my consultants judged (24b) deviant and (24c) acceptable. The contrast follows naturally from the present analysis: (24c) is a sluicing structure in which the pronoun together with the whole containing IP has been deleted in compliance with the E-marking requirement discussed above.

4.4 Solving the Determiner-Adjective Paradox

The present analysis can also account for the fact that possessive pronouns do not trigger the WCO effect in French and Spanish as we saw in section 3. Consider again the example in (16), repeated below for convenience.
This example is acceptable in Spanish and unacceptable in English, as shown by the deviance of the gloss. Why should there be such a difference between possessive pronouns and other regular Spanish pronouns like el ‘him’, which do trigger a WCO-like effect? I believe the answer to this question is to be found in the categorial status of Romance possessive pronouns. I believe that one can plausibly assume that Romance possessive adjectives are introduced into the derivations as adjectives (i.e., as A0’s lexical items). In modern Italian, for instance, possessive pronouns can be preceded by articles in phrases like la sua mama ‘his mother’ (literally: the his mother). In some dialects of Spanish, possessive pronouns can occur with articles and even in standard Spanish, possessives pronouns can occur with demonstratives in expressions like esta su casa ‘this his house’ (see Picallo and Rigau 1999). Historically, Romance possessive pronouns were adjectives. Thus in French, expressions like un mien livre ‘a book of mine’ (literally: a my book) were still possible almost at the beginning of the 20th century. Perhaps, more significant is the fact that possessive pronouns in all Romance languages still preserve the agreement pattern of adjectives. Thus, although English pronouns agree in number and gender with their antecedents, Romance pronouns agree in number and gender with the NP that follows them as shown in (26).

(26) Mary saw her books.

(27) Maria vio sus libros

M. saw PRON-pl book-pl

‘Maria saw her books’

(28) Marie et Amelie ont vu son livre

M. and A. have-seen PRON-s-m book-s-m.

‘Marie and Amelie saw their book’

In (26), her agrees in gender and number with the antecedent DP Mary. In the Spanish example in (27), on the other hand, the possessive pronoun sus agrees in number with the following NP and not with the antecedent Maria. Similarly, in the French example in (28), the pronoun agrees in number and gender with the following NP: Marie et Amelie is a semantically plural DP bearing feminine gender, and yet the pronoun is singular and masculine like the NP that follows it. If possessive pronouns are merged as A0s and then subsequently move to D in French and
Spanish, we capture the fact that they cannot co-occur with articles in these languages while preserving the agreement pattern of adjectives. I will assume that much in what follows. It turns out that with such an assumption in place, the behavior of Romance possessive pronouns with respect to the WCO effect follows automatically from the present analysis. Since A0s do not select NP complements, possessive pronouns of such categories cannot possibly be parallel merged with the NP of their complement or any other complement NP for that matter. Thus, the NP that follows such pronouns cannot be a copy of the NP of their antecedent. The set of $\varphi$-features spelled out by such pronouns is thus different from the set of $\varphi$-features of the antecedent DP, hence their realization does not violate antisymmetry.

5 Extension

The present analysis can be extended to cover a number of related phenomena that I cannot cover here, unfortunately. I will mention, however, two such phenomena. One is the phenomenon that Montalbetti (1984) addresses under the rubric of the Overt Pronoun Constraint (OPC). The other is the phenomenon discussed by Chomsky (1981) in proposing his Avoid Pronoun Principle. Montalbetti notices that in contexts in which it is possible to use an overt or a null pronoun in null subject languages, the overt pronoun cannot have a BVI. Montalbetti proposes the OPC, which can be defined as in (29).

(29) The Overt Pronoun Constraint:
In contexts in which an overt/null alternation obtains, an overt pronoun cannot be bound.

The OPC has been argued to be responsible for contrasts like the one in (30).

(30) [Nadie$_1$ dijo [que el$_{1/2}$/ pro$_{1/2}$ era comunista]]
No one$_1$ said that he$_{1/2}$/ pro$_{1/2}$ was communist
‘No one$_1$ said that he$_1$ was a communist’

In (30), the null element pro in the embedded clause can be bound by the quantificational subject of the matrix clause *no one* or it can refer to some salient entity in context. However, a BVI for the overt pronoun *el* ‘him’ is impossible in the same context. Notice that this configuration is not a WCO context, since both the quantifier and its trace c-command the pronoun to start with, hence a different principle was required at the time the OPC was proposed in order to account for such cases. Nevertheless, there are both conceptual and empirical problems regarding the OPC. On the conceptual front, the principle is at most a description of the facts without a principled explanation as to why the grammar should obey such a condition. On the empirical front, it has been reported that some pronouns in null subject languages can sometimes have a BVI in the same context in which a null pronoun can also occur. For instance, Gürel (2003) discusses the
behavior of the overt Turkish pronoun *kendisi* ‘self’ which is in free variation with the null element pro in violation of OPC.

A consequence of the current analysis of WCO is that it makes overt determiner pronouns costly. Given their propensity for violating antisymmetry under the BVI, the natural habitat for such pronouns are contexts of coreference. However, as Reinhart (2000, 2006) argues, successful coreferential uses of pronouns are subject to Rule I, a principle that induces reference set computation (global comparison of truth-conditionally equivalent alternatives), a process that is computationally costly. As a result of this, both null pronouns and overt pronouns of the categories of nouns and adjectives are less costly than overt pronouns of the category of determiners, as the formers cannot violate antisymmetry. A plausible hypothesis, then, is that OPC effects are the result of the less costly pronouns preventing the use of the computationally costly overt determiner ones. This view of OPC effects is conceptually superior to previous ones: the relevant effects follow from general principles of computational economy, hence no language specific principle is needed and we thus remove another barrier preventing the achievement of the minimalist goal of simplifying UG. This view of OPC is also conceptually superior to its predecessors. For instance, it can account for the exceptionality of *kendisi* in Turkish. Gürel (2003) translate this element as ‘self’, noting that as an adjective this pronoun means own. I take Gürel’s notes to show that *kendisi* ‘self’ is either a noun or an adjective. In either case, this element will not be able to be parallel merged with the NP of its antecedent. It thus cannot violate antisimmetry, hence it must be as computationally cheap as null pronoun. It is predicted, therefore, not to show OPC-like effects.

The effects related to the so-called Avoid Pronoun Principle follow in the same way. Consider the following contrast from Chomsky (1981).

(31) a. John would much prefer [his going to the movie]
    b. John would much prefer [his (own) book]

Chomsky notes that the pronoun in (31b) can refer to John or to somebody else, but that in (31a), there is a strong preference for interpreting the pronoun to mean somebody other than John. The possibility of coreference between John and the he of his book in (31b) shows that the bracketed constituent in (31) is not a context of disjoint reference. Chomsky notices that in (31a), but not in (31b), the null element PRO can occur in the position of the pronoun. He then conjectures that “the choice of reference” in (31a) “is dictated not by the disjoint reference principle, but rather by a principle that we may state in the most general terms as …Avoid Pronoun” (p. 65). Like the OPC effects Avoid Pronoun effects also follow from the present analysis: whenever a computationally cheaper pronoun can occur in the same context of a computationally costly one, the computationally cheaper item will be chosen in accordance with general principles of computational economy.
I am now in a position to answer a question that has sometime come up during my presentation of the previous data. Consider again the example in (19), repeated below for convenience.

(32) ?*Ningún niño a quien la madre de él haya maltratado t1 será aceptado

No child to whom the mother of him has mistreated t1 will-be accepted

sin examen psicológico.

without exam psychological.

‘No child who his mother has mistreated will be accepted without a psychological exam’

The question is the following. Since I have claimed that pronouns embedded inside a phase head cannot be seen by an agreeing searching probe, as they will not be in the search domain of the given probe, does my theory of WCO predict that examples like (32) should be acceptable if DPs are phases? The answer to that question is that the present analysis does not necessarily predict acceptability in the relevant contexts DPs are phases. Rather, for such environments, the current analysis predict the acceptability of determiner pronouns, only if there are no truth-conditionally equivalent examples involving computationally less costly items. From this perspective, the ungrammaticality of (32) follows from the fact that there is a truth-conditionally equivalent example involving the computationally cheap pronoun su ‘his’, namely example (25).

6 Conclusion

I have argued that the WCO effect reduces to a detectable violation of antisymmetry. In particular, I have argued that a determiner pronoun that agrees with a head that is the sister to the antecedent DP is marked for erasure at Spell-out by the system. Unless the pronoun is deleted by spell-out, something that is possible only if allowed by the standard conditions on the recoverability of information constraining ellipsis, the derivation is cancelled. We saw that the present approach can solve two paradoxes that arise in other alternative analyses. In addition, the account is principled in the sense that it reduces the phenomenon to bear output conditions. That is, the analysis pins the WCO effect to properties of syntax-phonology interface, without positing language or binding specific principle, and in fact, reducing some of the related principles invoked for accounting the behavior of some overt pronouns. Admittedly, many questions remain, but the approach is no doubt promising, and I intend to continue pursuing it in future research.
References


Irrealis as verbal non-specificity in Koro (Oceanic)

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1 Introduction

Reality status is a verbal category that is typically understood as distinguishing between realized and unrealized, or hypothetical, states of affairs (see, e.g., Mithun 1999).1 However, significant variability has been observed in the function of so-called ‘irrealis’ morphemes across languages, and this has led some scholars, such as Bybee (1998) and De Haan (2012), to question the validity of irrealis as a cross-linguistic category. I will argue for an alternative hypothesis — namely that there exist two overlapping but notionally distinct categories that have both been labelled ‘irrealis’. These categories are ‘unreality’ and ‘temporal non-specificity’. I will give evidence from Koro, an Oceanic language of Papua New Guinea, for the existence of a coherent grammatical category encoding temporal non-specificity, and argue that the marker is a single morpheme with a stable meaning across uses. My thesis is that the apparent lack of a coherent ‘irrealis’ category, as bemoaned by those such as Bybee, is due to promiscuous descriptive use of the label, rather than due to the non-existence of such a category. A number of scholars have previously proposed that the irrealis construction in a given language has semantics of temporal non-specificity; what I would like to suggest here is that the ‘temporal non-specificity’ category is in fact notionally distinct from the ‘unrealized’ category, and that, despite their considerable overlap, they should be treated as separate domains in descriptive and typological work. Further cross-linguistic research on reality status is clearly necessary to confirm this hypothesis, but such research will be greatly aided by maintaining an analytical distinction between the two categories that have traditionally been referred to as ‘irrealis’.

1.1 Definitions of reality status

Traditional characterizations of reality status articulate a category that distinguishes between ‘realized’ or ‘actual’ and ‘unrealized’ or ‘non-actual’ situations (e.g., Mithun 1999:173). This approach emphasizes the truth-conditional semantics of propositions. Within such a framework, realis contexts include non-future tense, positive polarity, and indicative mood, while irrealis contexts include future tense and prospective aspect, conditionals (including counterfactuals), negative polarity, and jussive modalities. However, it has also been noted that in many languages other contexts can trigger the same marking found in irrealis contexts. For example, subjunctive in the Romance languages, which is used in many of the irrealis contexts outlined above, is also found in utterances where the proposition is not strongly asserted, either because it is in doubt, or because it is presupposed (Palmer 2001:11). Such systems suggest that ‘non-assertion’ is the core meaning of irrealis. This is related to the idea of ‘uncertainty’ — the less certain a speaker is about their assertion, the more likely irrealis is to occur (e.g., Timberlake 2007:328). As such, the contexts for occurrence of the irrealis include presupposition, doubt, and unrealized or hypothetical contexts such as future and counterfactual. This characterization of reality status focuses on the communicative function of irrealis. On the other hand, a number of languages use irrealis in what seems superficially to be a clearly realis context — past habitual. For example, the Papuan language Bargam uses irrealis marking in combination with past imperfective to mark backgrounded habitual events (Hepner 2006:134), and Givón (2001:359) notes that in many Austronesian languages the primary tense–aspect–mood distinction is between realis and irrealis, the latter category being used in habituals, among other contexts. This type of system has led to an alternative characterization of irrealis, namely that it encodes temporal non-specificity. This type of approach treats irrealis as analogous to ‘non-specific’ in the nominal domain, in that realis asserts or presupposes the existence of an event E, whereas irrealis does not. Past habitual is non-specific in this sense because it quantifies over multiple past events, none of which is referred to directly. Expected contexts for irrealis marking under this approach include future tense and prospective aspect, conditionals (including counterfactuals), and past habituals.

Table 1 summarizes the contexts in which irrealis marking is expected, given each of these respective characterizations of its semantics. Contexts above the line are those in which the three types of semantic characterizations make the same predictions, while those below the line have different predictions for each definition of irrealis. It is clear from this table that contexts of negation, presupposition, uncertainty, and past habitual are the key environments in which to test the function of irrealis in a given language. In the following sections I will demonstrate that irrealis marking in Koro occurs in just those environments predicted by the ‘temporal non-specificity’ characterization.

1.2 Criticisms of the notion of ‘reality status’

Given the cross-linguistic variation touched upon in the above discussion, a number of scholars have questioned the validity and usefulness of identifying an ‘irrealis’ category cross-linguistically. Bybee (1998), for example, argues that irrealis is not a universal gram-type (where gram-types are “crosslinguistically common focal points for grammatical expression” in a given conceptual domain (p.262)). She observes that we know of no language in which a single grammatical category expresses a distinction between real and unreal states of affairs, and she contrasts this with cate-
Irrealis as verbal non-specificity in Koro (Oceanic)

<table>
<thead>
<tr>
<th>Semantics</th>
<th>Unrealized marking predicted</th>
<th>Non-assertion marking predicted</th>
<th>Temporally non-specific marking predicted</th>
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<tbody>
<tr>
<td>Jussive</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<td>Conditional</td>
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<tr>
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<tr>
<td>Future, prospective</td>
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<tr>
<td>Presupposition</td>
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<td>No</td>
</tr>
<tr>
<td>Interrogative</td>
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<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Past habitual</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 1: Comparison of contexts in which unrealized marking and temporally non-specific marking are predicted

gories such as perfective and imperfective aspect, which are grammatically encoded in language after language, and for which a stable core meaning can be posited cross-linguistically. However, Michael (to appear) has recently presented compelling evidence that Nanti, an Arawak language of Peru, does in fact have a binary inflectional category that distinguishes real from unreal states of affairs. Moreover, he shows that reality status is a stable grammatical category within the Kampan branch of Arawak, to which Nanti belongs. Given this counter-example, and the relative newness of scholarship on reality status, we might expect that other such neat reality status systems will be discovered as the concept is explored in more and more languages.

Bybee claims that languages fall into one of two categories in their treatment of the irrealis domain. The first type of language has a number of different morphemes, each of which covers only part of the conceptual domain of ‘irrealis’. For example, Lake Miwok (Callaghan 1998) has separate morphemes for future, negation, purposive, and counterfactual, alongside a single morpheme that covers desire, intention and sometimes future and imperative. Bybee claims that in such languages there is no grammaticalized irrealis category; instead, there is a range of different morphemes with more specific meanings, such as ‘desiderative’ or ‘optative’. This is a fair analysis of languages such as Lake Miwok, and I do not wish to propose that every language has a grammatically instantiated irrealis category. However, the existence of such languages does not disprove the cross-linguistic validity of ‘irrealis’ as a category. Many languages divide up other accepted gram-types into more fine-grained distinctions. For example, the category of ‘past tense’ in languages like Matses (Fleck 2007) and Luganda (Comrie 1985:93) is divided into finer semantic distinctions, such as recent, remote and distant, but this does not detract from the fact that ‘past tense’ forms a coherent semantic domain for grammatical expression cross-linguistically. The difference between past tense and irrealis in this respect is that past tense is grammaticalized much more frequently in the world’s languages than is irrealis. The claim here though is that this is a quantitative, rather than a qualitative, difference, and that the relative infrequency of its realization as a grammatical category is not strong evidence against the validity of irrealis as a cross-linguistic category.

In the second type of language that Bybee describes, a highly generalized morpheme occurs in most, but not all, of the contexts covered by the notion of ‘irrealis’. Moreover, this generalized
morpheme cooccurs with another, more specific, morpheme in each of its different uses. An example of this type of language is Caddo (Chafe 1995), in which the so-called ‘irrealis’ personal prefixes, when occurring alone, mark a polar interrogative. In all other uses they pair with another morpheme that specifies the type of irrealis meaning, such as negation, prohibition, obligation, conditional, simulative, infrequency, and surprise. Bybee analyzes so-called ‘irrealis’ morphemes in such languages as instead being a set of polysemous morphemes that each gets its specific meaning from the construction in which it occurs. This analysis likens the irrealis morpheme in such languages to morphemes like have in English. Aside from its lexical meaning of possession, have can denote obligation (I have to go to France) or perfect aspect (I have gone to France). These two uses of have do not reflect a core shared semantics, and in addition there are phonological and selectional differences between the two (for example, have selects an infinitival complement in one case and a past participle in the other). As such, it is clear that these two morphemes are separate morphemes that happen to have grammaticalized from the same source. Bybee argues that this is likewise the case for irrealis morphemes in languages of the type described here. I will argue, however, that Koro is an example of a language where this analysis does not fit. In contrast, I claim that the irrealis morpheme in Koro is indeed a single morpheme, and that it has a consistent, if abstract, core semantics across its uses.

The remainder of the paper is structured as follows. In §2 I first describe some relevant aspects of the grammar of Koro, then in §3 I outline the morpho-syntactic characteristics of reality status marking in Koro. In §4 I describe and exemplify each of the semantic contexts that trigger irrealis marking in Koro, and in §5 I explore the implications of the Koro data for a theory of reality status cross-linguistically. It should be noted that throughout this paper, although I refer to the morphemes in question as reality status morphemes, this is a matter of terminological convenience, and does not indicate an analytical claim. I urge the reader to keep in mind that these morphemes in Koro encode a distinction between temporal specificity and non-specificity, rather than a distinction between real and unreal events. One of my proposals is that the terminology in this domain should be made more precise, so as to distinguish between the different types of so-called reality status that have been identified. Since I know of no simple alternative, however, I retain the label ‘irrealis’ as a short-hand for the Koro category throughout this discussion.

2 The Koro language and its speakers

Koro is an Austronesian language, spoken by a few hundred people in Manus Province, off the north coast of the Papua New Guinea mainland. It is part of the little-studied Admiralties branch of the Oceanic sub-group. The dialect described here is spoken by some hundred or so people in the villages of Papitalai, Riu Riu, and Naringel, on Los Negros Island. Due mostly to pressure from Tok Pisin and English, intergenerational transmission is declining sharply in these villages, and all community members use Tok Pisin as their main language of everyday communication. The analysis presented here is based on data collected by the author during approximately seven months of fieldwork from 2009 to 2013, primarily conducted in Papitalai village.

Koro has strict SVO word order, and there is no case case-marking, other than in a small number of pronouns. The language is largely isolating, with aspect and mood categories primarily indicated by free morphemes. There is no grammaticalized tense, but reality status is obligatorily marked in verbal clauses. As shown in (1-2), morpheme k- indicates ‘irrealis’, and occurs between
Irrealis as verbal non-specificity in Koro (Oceanic)

the subject and the verb, while realis is unmarked (see §3 below for further details).

1. Ha you ku lisi Luwe.
   ha you k-u lisi Luwe
   PROSP 1SG.SBJ IRR-1SG see Luwe
   ‘I’ll see Luwe.’ (2011-03-11-AH_AV-02_0257)

2. I lisi Luwe.
   i ∅ lisi Luwe
   3SG REAL see Luwe
   ‘He saw Luwe.’ (2011-03-11-AH_AV-02_0258)

Perfect aspect and negation morphemes also occur between the subject and the verb. As shown in (3), perfect aspect is marked by morpheme k-...ni, while negation is marked by preverbal ta combined with clause-final pwi, as in (4).

3. I pihin a, i kini hekohe timou ndramat ta lohanum.
   i pihin a i k-i-ni hekohe timou ndramat ta lohanum
   3SG woman DIST 3SG PERF-3SG-PERF hide one:PERSON person LOC inside.house
   ‘That woman, she has hidden a man inside her house.’ (v2012-08-02-CB-04_0231)

4. I ta jan pwi.
   i ta jan ∅ pwi
   3SG NEG eat 3INAN.OBJ NEG
   ‘He didn’t eat it.’ (2011-03-09-AH_AV-01_0078)

Reality status, perfect aspect, and negation are in complementary distribution, and only one of the three categories can occur in a simplex clause. There is also a pre-verbal aspctual slot, which houses prospective marker (h)a, and an additional slot immediately before reality status, in which proximative p- can occur. Prospective is used with future temporal reference where the speaker has a high degree of certainty about the eventuality occurring, as illustrated in (5). Proximative, on the other hand, is used for imminent states of affairs regardless of certainty, and often has a desiderative implicature, as shown in (6). Both require irrealis k- to cooccur (as discussed further in §4 below).

5. Ha i ki los me pwan.
   ha i k-i los me pwan
   PROSP 3SG IRR-3SG fall come down
   ‘He will fall down.’ (Elicitation-2013-07-30-AD_CA_0122)

6. I pi ki los me pwan.
   i p-i k-i los me pwan
   3SG PRXMV-3SG IRR-3SG fall come down
   ‘He is about to fall down~He wants to fall down.’(Elicitation-2013-07-30-AD_CA_0121)

Table 2 shows the positional slots in the Koro verbal clause (where ‘AM’ stands for ‘aspect-modality’).
Table 2: Surface positional slots in the Koro clause

<table>
<thead>
<tr>
<th>AM slot 1</th>
<th>AM slot 2</th>
<th>AM slot 3</th>
<th>Verb</th>
<th>Clause-final</th>
</tr>
</thead>
<tbody>
<tr>
<td>(h)a</td>
<td>p-</td>
<td>k-</td>
<td>pwi</td>
<td></td>
</tr>
<tr>
<td>PROSP</td>
<td>PRXMV</td>
<td>IRR</td>
<td>NEG</td>
<td></td>
</tr>
<tr>
<td></td>
<td>k-. . .</td>
<td>PERF</td>
<td>ta</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-ni</td>
<td>NEG</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 Morpho-syntax of reality status in Koro

As noted above, irrealis in Koro is marked by pre-verbal particle k-, which occurs immediately before the verb. This is illustrated again in (7), where the irrealis morpheme ku occurs between subject you ‘first person singular’ and verb piri ‘take (a person)’.

(7) You ku piri nambrulu.

you k-u piri nambrulu-∅
1SG.SBJ IRR-1SG take:person spouse-1SG.POSS

‘I’m going to take a wife.’ (2011-03-07-AH_AV-03_0092)

Realis, on the other hand, is indicated by the absence of an overt marker between the subject and verb, as in (8). Here there is no marker between subject yourun ‘first person plural exclusive’ and verb la ‘walk’. The utterance is interpreted as realis, and by default, past tense.

(8) Yourun la le hou a.

yourun ∅ la le hou a
1PL.EXCL REAL walk go.to bush DIST

‘We walked to the bush.’ (v2012-07-21-AD_BZ-02_0029)

Irrealis k- inflects to agree with the subject of the clause. However, there is massive syncretism in the irrealis paradigm. Koro personal pronouns distinguish three persons, as well as singular, dual and plural number, and inclusive and exclusive in the first person. In the irrealis inflections on the other hand, three persons are distinguished in the singular, but there is just a single suffix for all non-singular persons. Note that with the first person singular subject in (7) above irrealis has the form ku, while with third person singular subject i in (9) it becomes ki.

(9) I ki tuweni kaikai.

i k-i tuwe-ni kaikai
3SG IRR-3SG cook-SPEC.OBJ food

‘She will cook the food.’ (2011-04-23-AA-02_0038)

In contrast, irrealis is realized invariantly as ka with both second person dual aru in (10) and first person plural exclusive yourun in (11). It does not inflect for person, nor are there different forms for dual and plural number.
(10) Aru ka la hou!
aru  k-a    la    hou
2DU  IRR-NON.SG  go:ANDAT  bush

‘You two go to the bush!’

(11) Yourun ka la mwa yourun ka lisi.
yourun  k-a    la    mwa    yourun  k-a    lisi  ∅
1PL.EXCL  IRR-NON.SG  go  COORD  1PL.EXCL  IRR-NON.SG  see  3INAN.OBJ

‘We’ll go and we’ll watch it.’

Suppletive irrealis form a occurs in second person singular, as shown in (12).

(12) Au a la hou liye, a la kah pamei e warah!
au  a    la    hou    liye    a    la    kah    pamei    e
2SG  2SG:I RR  go:ANDAT  bush  again  2SG:I RR  go:ANDAT  look.for  betelnut  COORD
warah

‘You, go to the bush again and look for betelnut and mustard!’

Often the second person singular pronoun au is omitted in such constructions, as in (13).

(13) A le pelingan, a nak pamei sarah!
a  le    pelingan  a    nak    pamei    sa-rah
2SG:I RR  go-up  2SG:I RR  climb  betelnut  stand-DIST

‘Go up there and climb the betelnut that’s standing over there!’

Table 3 shows the full Koro irrealis paradigm.

<table>
<thead>
<tr>
<th></th>
<th>1st person</th>
<th>2nd person</th>
<th>3rd person</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINGULAR</td>
<td>k-u</td>
<td>a</td>
<td>k-i</td>
</tr>
<tr>
<td>NON-SINGULAR</td>
<td></td>
<td>k-a</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Koro irrealis forms

4 Distribution of irrealis in Koro

Here I outline the range of functions that irrealis-marked clauses fulfill in Koro discourse. These divide into contexts in which irrealis k- can or must be the only instantiation of irrealis in the construction, and those in which k- obligatorily combines with another, more specific, irrealis morpheme. I discuss each of these contexts in turn. Past habitual is discussed separately. Finally, I present a number of contexts that are marked as irrealis in other languages, but are realis in Koro. Table 4 summarizes the contexts that trigger irrealis marking in Koro.
4.1 Irrealis contexts that do not require an additional specifying morpheme

Future tense, prospective aspect, jussive (or speaker-oriented) modalities, other deontic modalities, purposive adjuncts, and desiderative complements require irrealis k- to occur in Koro. All of these meanings are frequently realized without the addition of a more specific morpheme, and jussive modalities and desiderative complements do not allow any additional irrealis morpheme to occur. As such, the meaning of an irrealis clause is often only discernible in context. All translations in the following examples are those given by native speakers in the context of the ongoing discourse. Elicited examples are typically speakers’ translations into Koro of sentences I presented in English.

The utterances in (14–15) have future temporal reference. The clause in (14) is marked only by irrealis ku, whereas that in (15) is marked additionally by prospective aspect marker ha. The difference between future referring clauses with and without ha is not entirely clear, but it appears that those marked with ha may indicate greater certainty on the part of the speaker than those without. The exact semantic contribution of ha requires further research.

(14) Mwah you ku me nam niu.

mwah you k-u me namw niu
next.day 1SG.SBJ IRR-1SG come scrape coconut

‘Tomorrow I’ll come and scrape coconut.’ (Elicitation-2013-07-18-AD_0003)

(15) Mwah, ha you ku senisim au.

mwah ha you k-u senisim au
next.day PROSP 1SG.SBJ IRR-1SG change 2SG

‘Tomorrow, I will change you.’ (2011-03-07-AH_AV-03_0056)
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Irrealis k- and prospective ha also occur in relative future, alternatively termed prospective aspect (although ha occurs only rarely in these contexts). In prospective aspect, the reference time is prior to the time of utterance, but the time of the event is projected to be after the reference time. In other words, it is the ‘future in the past’. The utterance in (16), for example, is from a first person narrative in which the speaker is recounting events that actually occurred in the past. She uses irrealis ka to indicate the subjects’ intention at the time to go and look for betelnut. In (17), on the other hand, irrealis marking occurs in the complement clause ha i ki me ‘he would come’. The reference time here is the time at which Rex informed the speaker, and use of irrealis indicates that Rex’s coming was anticipated to occur after that time. (The final clause indicates this did not in fact eventuate.)

(16) Yourun ka la kah pamei.

yourun k- a  
IPL.EXCL  IRR-NON.SG go
la  
ANDAT look.for
kah  
look for
pamei  
betelnut

‘We were going to go and look for betelnut.’

(17) Rex i popohar jua munuwe ha i ki me, tapwah i ta me pwi.

Rex i  
Rex  
3SG REAL inform
popohar jua  
inform
munuwe ha  
1SG prev.day PROSP 3SG come but
i  
3SG NEG come
ki  
IRR-3SG
me  
IRR-3SG
pwi  
NEG

‘Rex told me yesterday he would come, but he didn’t come.’

Another context in which irrealis k- is obligatory is with jussive modalities, including imperative (18), hortative (19), and optative (20). The optative clause in (20) ki ru (literally ‘let it stay’) is used here as a polite imperative ‘leave it!’

(18) A rei mweh!

a  
2SG:IRR
rei  
hit SPEC:OBJ
mweh  
dog

‘Hit the dog!’

(19) To ka la so ni!

to  
1PL.INCL.SBJ  IRR-NON.SG go spear fish
ka  
IRR-NON.SG
la  
go
so  
spear fish
ni  

‘Let’s go and spear fish!’

(20) Ndwal a ki mekek. Ki ru!

ndwal a  
DIST  IRR-3SG
ki  
IRR-3SG
mekek k-i  
IRR-3SG flimsy
ru  
IRR-3SG

‘The canoe will be too flimsy. Leave it (literally: let it stay)!’
All of the jussive modalities are expressed by the irrealis, with no additional specifying morpheme. **Deontic modalities** of weak and strong necessity also require irrealis $k$-, with or without another specifying morpheme. For example, in (21), deontic ‘should’ is encoded solely by irrealis marking, while in (22) irrealis marking combines with distal demonstrative $kara$ to encode a similar meaning.

(21) I pwai le he kei, kei le ndramat piri pwan, rang i ki ru, kei ta chinal, ki mul le pilingan.

$\text{i } \emptyset \text{ pwa}-\text{i le he kei kei le ndramat piri pwan rang i}$

3SG REAL say-SPEC.OBJ go.to DAT tree tree go.to man of ground day 3SG

$k$-i $\text{ru kei ta chinal} k$-i $\text{mul le pilingan}$

IRR-3SG stay tree POSS devil IRR-3SG return go.to sky

‘He said to the tree, if it was a man from the earth, it should stay in the day, if it was a devil’s tree it should go back to the sky.’  

(2011-03-07-AH_AV-03_0106–09)

(22) Kara a chim rais le taun le cha mbrunen ndohin.

$kara a \text{chim rais le taun le cha} mbrune-n \text{ndohin}$

DIST 2SG:IRR buy rice go.to town because price-3SG.POSS small

‘You should buy rice in town because it’s cheaper.’  

(Elicitation-2011-03-22-AH_AV_0094)

Strong necessity can also be encoded by either irrealis alone, as in (23), or by irrealis in combination with control verb $mas$ ‘must’, as in (24).

(23) Aruwar to ka inei mangas cholan.

$aruw\text{ar to k}$-a $\text{inei mangas cholan}$

now 1PL.INCL.SBJ IRR-NON.SG make work plenty

‘Now we must do a lot of work.’  

(Elicitation-2012-07-12-AD_BZ_0160)

(24) You mas you ku la kah yeniyan.

$you \emptyset \text{mas you k}$-u $\text{la kah yeniyan}$

1SG.SBJ REAL must 1SG.SBJ IRR-1SG go:ANDAT look.for food

‘I must go and find some food.’  

(2011-03-22-AH_AV-03_0015)

Purposive and desiderative constituents also require irrealis marking. **Purposive adjuncts** either take irrealis marking by itself, as in (25), or they are introduced by preposition $piri$ ‘for, of’, as in (26). There is no clear semantic distinction between purposives with and without $piri$. (Note that the events marked as irrealis in (26) have actually occurred at the time of utterance, and are therefore ‘realized’ events in the strictest understanding of the term.)

(25) You ku ruwi au a la leti a senisim au mwa…

$you \text{k}$-u $\text{ruwi au a la le}=\text{ti a senisim au}$

1SG.SBJ IRR-1SG put 2SG 2SG:IRR go:ANDAT PROX=stay 2SG:IRR change 2SG mwa

COORD
‘I will take you so you can go and change yourself, and…’

(211-03-07-AH_AV-03_0060)

(26) Au senisim au piri a me mwa a piri jua.

au 2SG REAL change 2SG for 2SG:IRR come COORD 2SG:IRR get.person 1SG.OBJ

‘You changed yourself so that you could come and marry me.’

(211-03-08-AH_AV-01_0182)

Complements of desiderative verbs such as lengi, laikim ‘want, like’, and mbrwere- ‘not want, dislike’ are marked as irrealis, as in (27–28). The complement is optionally introduced by the preposition lengeri ‘like’.²

(27) i 3SG REAL laikim lengeri ni mwatih k-i ru polo ndwal

fish every IRR-3SG stay top canoe

‘He wanted all the fish to stay in the canoe.’

(211-03-08-AH_AV-01_0116)

(28) You mbrwere ni ki lus.

you 1SG.SBJ REAL not.want-1SG:POSS fish IRR-3SG be.lost

‘I don’t want the fish to disappear.’

(211-03-08-AH_AV-01_0112)

In the above examples the desired (or undesired) event is after the reference time, and therefore this usage falls within an analysis of irrealis as a marker of prospective aspect. When the desiderative complement does not have future temporal reference, however, it surfaces instead as a nominalized VP. This is shown in (29–30), where the nominal complements instantiate ongoing or iterated activities with past or present temporal reference.

(29) You lengi mesenga ndap.

you 1SG.SBJ REAL like make-NMLZR basket

‘I like making baskets.’

(Elicitation-2012-07-11-AD_BZ_0085)

(30) I ta mbrweren kaniya epi.

i 3SG IMPFV not.want-3SG.POSS eat-NMLZR sago

‘He never wants to eat sago.’

(Elicitation-2013-07-31-AD_CA_0103)

Certain verbs, however, cannot be nominalized. These include all path and locative verbs. When such a verb occurs in the complement to a verb of desire, it is marked as irrealis, whether it has future temporal reference or not. This is illustrated in (31), where the activity of going to town is understood to have occurred, and continues to occur, every day. Since path verb le ‘go to’ cannot be nominalized, it instead occurs in an irrealis-marked clausal complement.

²The root mbrwere- is one of a small class of predicative elements that behave morphologically like inalienable nouns, taking a possessive suffix to agree with the subject of the clause. The other such roots are mucho- ‘be full’ and tana- ‘know’.
(31) You lengi you ku le taun le rang mamonein.

‘I like to go to town every day.’ (Elicitation-2012-07-11-AD_BZ-0096)

This shows that the function of irrealis in desiderative complements cannot be reduced to prospective aspect, since not all occurrences fit the criteria for prospective aspect.

**Conditionals**, including hypothetical and counterfactual constructions, are another context in which irrealis marking is obligatory. In Koro, the protasis of a conditional is typically introduced with *tehene* ‘thus’ or *lengeri* ‘like’, although there is occasionally no overt marking of the protasis (see (33) below). In a hypothetical conditional, only the apodosis must be marked for irrealis. This is demonstrated in (32), where the protasis *lengeri i kini koh niu* ‘if she has gathered coconuts’ is marked for perfect aspect, and the apodosis *ha i ki ru mesenge ndrelike* ‘she will be making oil’ is marked as irrealis.

(32) Lengeri i kini koh niu, ha i ki ru mesenge ndrelike.

‘If she has gathered coconuts, she will be making oil.’ (Elicitation-2012-08-08-BZ_0048)

In hypothetical conditionals such as this, the speaker is not committed to the truth of the proposition in the protasis, but nor are they committed to its falsehood. Counterfactuals, on the other hand, entail that the proposition in the protasis is false. As such, both the protasis and the apodosis of a counterfactual conditional are marked for irrealis. For instance, the utterance in (33) entails that the subject is not here now, and the protasis *i ki ru rangeh* ‘if she were here now’ is marked as irrealis. The apodosis is not irrealis-marked in this example because it has a non-verbal predicate *tehene ke jua* ‘like me’, which cannot host any aspect or mood marking.

(33) I ki ru rangeh e i tehene ke jua kepi e.

‘If she were still here she would be just like me.’ (2011-04-23-AA-02_0180–81)

In contrast, the utterance in (34) has a non-verbal protasis and a verbal apodosis, and here the apodosis takes irrealis marking.

(34) Munuwe tehene lengin, you ku ru kor.

‘If it had rained yesterday, I would have stayed home.’ (Elicitation-2011-03-31-AH_AV_0002)

In summary, the apodosis of a hypothetical conditional is marked as irrealis, while the protasis, which the speaker neither asserts to be true nor false, is not. In contrast, the apodosis and protasis of a counterfactual, both of which the speaker asserts to be false, are both marked as irrealis.
4.2 Irrealis contexts that require an additional specifying morpheme

I now move on to discuss the contexts in which irrealis k- obligatorily combines with another, more specific, morpheme. These contexts are proximative aspect, prohibitives, and precautionary adjuncts.

Proximative is a grammatical aspect that indicates that the eventuality of the predicate is imminent (Heine 2002:90). In Koro this aspect is indicated by particle p-, which follows the same inflectional paradigm as irrealis k-. For example, use of proximative in (35) indicates that the canoe is on the brink of floating away.

(35) Ndwal pi ki pit le mahun.

`The canoe is about to float away.'

Proximative aspect can occur with both volitional and non-volitional subjects, and with volitional subjects it typically has a desiderative implicature, as in (36–37).

(36) E pi la kisi. Pwi, ta tu pwi.

`And she wanted to go and see it, but no, it wasn’t there.’

(37) Youru noh. Youru pa ka chong le hou.

`We were afraid, we wanted to go into the bush.’

To express proximative aspect, both proximative p- and irrealis k- are required. As shown in (38), proximative cannot occur without irrealis marking.

(38) You pu *(ku) metir.

`I want to sleep.’

Like the proximative, prohibitive mbrwa also obligatorily occurs with irrealis. It is a modality indicating prohibition or admonition, as in (39) or negative optative, as in (40).

(39) Mbrwa a la hou!

3 Older speakers, however, often realize this morpheme as pa, regardless of the person or number of the subject. It is likely that the proximative particle grammaticalized from lexical verb pwa ‘say’, and that the inflection observed in younger speakers’ discourse is a result of vowel harmony, influenced by the vowel of the following irrealis morpheme. I nonetheless treat it as morphological inflection here, since my primary consultants consider the invariant pa form incorrect.
Finally, precautionary adjuncts, expressing a semantics of ‘in case’ or ‘lest’, are also obligatorily marked as irrealis. The precautionary semantics is encoded by the complementizer *mala* (*pwi*). The *pwi* (which is a negation particle) appears to be optional in this construction, and its inclusion or omission does not seem to affect the semantics of the construction. The proposition expressed in the *mala pwi* clause can be either a desired or an undesired event, as illustrated in (41–42) respectively.

(41) You letu sirah mala pwi to ko kah karahat.

\[
\begin{align*}
\text{you} & \quad \text{le=tu} & \quad \text{sirah} & \quad \emptyset & \quad \text{mala pwi} & \quad \text{to} & \quad \text{k-a} & \quad \text{kah} \\
1\text{SG.}\text{SBJ} & \quad \text{PROX}=& & \text{carry} & \quad 3\text{INAN.}\text{OBJ in.}\text{case} & \quad 1\text{PL.}\text{INCL.}\text{SBJ} & \quad \text{IRR-NON.}\text{SG search.}\text{for} & \\
& & & & & \text{karahat} & & \text{mud.crab}
\end{align*}
\]

‘I’m bringing it (a bag) in case we find any mud crabs.’ (Elicitation-2012-07-23-BZ_0078)

(42) You chongani life jacket mala pwi ndwal ki lol.

\[
\begin{align*}
\text{you} & \quad \emptyset & \quad \text{chongani} & \quad \text{life jacket} & \quad \text{mala pwi} & \quad \text{ndwal} & \quad \text{k-i} & \quad \text{lol} \\
1\text{SG.}\text{SBJ} & \quad \text{REAL} & \quad \text{wear} & \quad \text{life.jacket in.}\text{case} & \quad \text{canoe} & \quad \text{IRR-3SG sink}
\end{align*}
\]

‘I put on the life-jacket in case the canoe sinks.’ (Elicitation-2012-07-23-BZ_0079)

The *mala pwi* clause can also express an aversive meaning, ‘lest’. In (43), for example, the proposition *u ka rei au* is an undesired event that the event of the main clause is intended to avert.

(43) You ku lop mala u ka rei au.

\[
\begin{align*}
\text{you} & \quad \text{k-u} & \quad \text{lop mala} & \quad \text{u} & \quad \text{k-a} & \quad \text{re-i} & \quad \text{au} \\
1\text{SG.}\text{SBJ} & \quad \text{IRR-1SG hide in.}\text{case} & \quad 3\text{PL.}\text{SBJ} & \quad \text{IRR-NON.}\text{SG strike-SPEC.}\text{OBJ} & \quad 2\text{SG}
\end{align*}
\]

‘I’ll hide, lest they beat you.’ (Elicitation-2012-06-29-AV_0037)

As can be seen from the above examples, the *mala pwi* clause in all these uses takes irrealis marking.

### 4.3 Past habitual

For the most part, the contexts for irrealis marking described above are fairly unsurprising, and do not provide strong evidence against an interpretation of Koro irrealis as encoding ‘unrealized’ events. I discuss past habitual separately here because, given the ‘unrealized’ characterization
of irrealis, it is an unexpected context in which to find irrealis marking. Past habitual events are, after all, a prototypical instance of ‘realized’ events. They are asserted to have actually occurred a number of times in the past, and it is therefore surprising that they should trigger irrealis marking. Nonetheless, as noted in §1.1 above, irrealis marking of past habituals is reported for a number of languages, and past habitual is a predicted context for irrealis marking when irrealis is understood as a category encoding temporal non-specificity. In Koro, past habitual events are optionally marked as irrealis. The typical way of expressing past habitual events is in a realis serial verb construction, with one of the verbs *ru* or *ri* ‘stay, be located’. This is illustrated in (44), which is not marked for irrealis, but expresses a past habitual meaning.

(44) Hamu, tino i ri tuwe karahat.

\[
\text{hamu } \text{tino } i \emptyset \text{ ri tuwe karahat} \\
\text{before mother:1SG.POSS 3SG REAL stay cook mud.crab}
\]

‘Before, my mother used to cook mud crab.’ (Elicitation-2012-08-06-AD_BZ_0086)

The same serial verb construction can also express other imperfective aspects, as illustrated in (45). Here the interpretation is past continuous, rather than habitual. Whether this type of serial verb construction is interpreted as habitual or continuous is largely dependent on context.

(45) Munuwe i ri singe chalau.

\[
\text{munuwe } i \emptyset \text{ ri singe chalau} \\
\text{day.before 3SG REAL stay wash laplap}
\]

‘Yesterday s/he was washing clothes.’ (Elicitation-2011-03-31-AH_AV_0062)

In narratives habitual aspect is often not indicated by the imperfective aspect construction shown above, but is instead indicated by irrealis *k-*, as in (46).

(46) a. Ol taim i ki la ki ri pondrawat he rutun le pohaleng.

\[
\text{ol } \text{taim i k-i la k-i ri pondrawat he rutun le} \\
\text{DEF.PL time 3SG IRR-3SG go IRR-3SG stay:IRR play DAT 3PL go.to pohaleng.} \\
\text{beach}
\]

‘All the time he would go and he would be playing with them on the beach.’

b. I la ki la mwa tehene. . .

\[
i \text{ la k-i la mwa teh-e} \\
\text{3SG go IRR-3SG go COORD SIMIL-PROX}
\]

‘It went on and on and...’ (2011-04-23-AA-02_0216-0217)

The habitual semantics of this construction is indicated by use of the adverbial *ol taim* ‘all the time’, and by the following clause *i la ki la* ‘it went on and on’. A variant of this clause almost always follows a habitual description, and can be repeated iconically to indicate duration.

Another example of a habitual construction is in (47). Here the speaker is telling a story based on a series of pictures provided to her. She is describing the typical daily activities of the subjects.

\footnote{The pictures were part of San Roque et al’s (2012) narrative problem solving task.}
in the pictures. After setting up this background, she then relates a particular climactic event that occurred only once in the narrative. In relating this individual event, of the man hitting his wife, she switches from irrealis marking to unmarked realis.

(47) a. UnDRAMAT e u ka leti jin ndran,
   3PL.man=PROX 3PL.SBJ IRR-NOM.SG go.to=stay drink fresh.water
   ‘These men would go out drinking.’

b. hengorou piri keheya pihin a tirah.
   thought of look.for-NOM woman=DIST stay=DIST
   ‘and they would think about looking for women.’

c. I k-i mul le kor i k-i le tah nambrulun.
   3SG IRR-3SG return go.to village 3SG IRR-3SG go.to strike spouse-3SG.POSS
   ‘He would return to the village and he would go and hit his wife.’

d. I la i la i la, piri tih a i rei nambrulun.
   3SG go 3SG go 3SG go time one=DIST 3SG REAL strike-SPEC.OBJ spouse-3SG.POSS
   ‘This went on and on until one time he hit his wife.’ (2011-04-07-AH_AV-03_0391–94)

As is clear from these examples, irrealis marking is a common device used to relate events in habitual aspect. Its use in this context does not fit with a characterizatin of irrealis as marking ‘unrealized’ events. In §5 I will discuss further how habitual and related uses can be explained by invoking a ‘temporally non-specific’ semantics for irrealis aspect.

4.4 Contexts that do not trigger irrealis marking

In this section I describe a number of contexts that are treated as irrealis in certain other languages, but do not trigger irrealis marking in Koro. These contexts include negative polarity, uncertainty, frustrative, and interrogative mood.

Events under the scope of negation are by definition unrealized, and would therefore be expected to trigger irrealis marking. In Koro, however, negative polarity does not trigger irrealis marking. As shown in (48), negation in verbal clauses is instead indicated by pre-verbal particle ta, in combination with clause-final pwi.

(48) You ta tuweni ni pwi.
    1SG.SBJ NEG cook-REF.OBJ fish NEG
    ‘I didn’t cook the fish.’ (Elicitation-2012-07-14-AD_BZ_CA_0015)
It is possible to express a negative irrealis meaning in Koro – for example to negate a future event – but this requires a raising construction in which modal verb *nap* ‘can’ takes the irrealis clause as its complement. This is illustrated in (49–50) below. In (49), the negated clause expresses a future event, while in (50) it expresses the consequent of a hypothetical conditional construction.

(49) Ta nap you ku tuweni ni pwi.

```
    ta  nap  you   k-u  tuwe-ni   ni   pwi
NEG  can  1SG.SBJ  IRR-1SG  cook-SPEC.OBJ  fish  NEG
```

‘I won’t cook the fish.’ (Elicitation-2012-07-14-AD_BZ_CA)

(50) Ha kopwem ki la, ta nap i ki me pelingan pwi.

```
      ha  kopwe-m   k-i  la  ta  nap  i  k-i  me  pelingan  pwi
PROSP  hand-2SG.POSS  IRR-3SG  go  NEG  can  3SG  IRR-3SG  come  up  NEG
```

‘If you put your hands (on it), it won’t come up.’ (2011-04-23-AA-03_0239)

It is clear from these examples that negation is not an irrealis category in Koro. It does not trigger irrealis marking, and the realis–irrealis distinction is maintained under the scope of negation.

Another context in which irrealis marking is found in a number of languages is contexts of **uncertainty** or **inference**. As shown in (51), even when a speaker has a low level of confidence in the truth of a proposition, realis marking is still perfectly acceptable. Here the speaker does not know whether the subject hit his wife or not, but the subordinate proposition *i rei nambrulun* ‘he hit his wife’ is nonetheless marked as realis. Likewise, in (52), occurrence of the adverb *kapwa* indicates that the speaker is uncertain about the truth of the proposition, but this does not trigger irrealis marking.

(51) Pwi, you ta lis i rei nambrulun pwi.

```
      pwi  you   ta  lis  i  ϕ   re-i  nambrulu-n  pwi
NEG  1SG.SBJ  see  3SG  REAL  strike-SPEC.OBJ  spouse-3SG.POSS  NEG
```

‘No, I didn’t see him hit his wife.’ (Elicitation-2013-08-09-AD_CA_0143)

(52) Kapwa i chapol yesi window a i kini yau.

```
    kapwa  i  ϕ  chapol  ye-si  window=a  i  k-i-ni  yau
maybe  3SG  REAL  jump  go-via  window=DIST  3SG  PERF-3SG-PERF  leave:PERF
```

‘Maybe he jumped through the window and is gone.’ (2011-03-22-AH_AV-02_0036)

Similarly, inferential use of modal *mas* ‘must’, as in (53), does not trigger irrealis marking (compare this with its deontic use in (24) above, which does require irrealis marking).

(53) I mas i kini ndrah ndwal.

```
    i  ϕ  mas  i  k-i-ni  ndrah  ndwal
3SG  REAL  must  3SG  PERF-3SG-PERF  board  canoe
```

‘He must have boarded the canoe.’ (Elicitation-2012-08-08-BZ_0057)
Another context that surprisingly does not trigger irrealis marking is **frustrative adverb** *tahit*. This morpheme indicates that the event of the predicate was attempted, but not fully realized. For example, the utterance in (54) indicates that the subject tried to climb the tree, but did not make it to the top, and the utterance in (55) likewise entails that a spearing event took place, but that the intended object of the spearing was not struck. In neither case does the clause require irrealis marking.

(54) I nak kei a tahit.

\[
\begin{array}{l}
i \emptyset \text{ nak kei=}a \text{ tahit} \\
3SG \text{ REAL climb tree=}\text{DIST \text{FRUSTR}}
\end{array}
\]

‘S/he tried to climb that tree (unsuccessfully).’ (Elicitation-2012-07-23-BZ_0054)

(55) You le soi i tahit.

\[
\begin{array}{l}
you \emptyset \text{ le so=}i \text{ i tahit} \\
1SG.\text{SBJ REAL go.to spear-SPEC.OBJ 3SG \text{FRUSTR}}
\end{array}
\]

‘I went and tried to spear him/her (unsuccessfully).’ (Elicitation-2012-07-23-BZ_0061)

The final context in which irrealis marking might be expected is in **interrogatives**. In Koro, neither polar nor *wh*-interrogatives trigger irrealis marking. In (56), for example, a *wh*-question is unmarked for irrealis, while (57) shows an unmarked polar question.

(56) Mweh e mesi ndihe?

\[
\begin{array}{l}
mweh=e \emptyset \text{ me}=si \text{ ndihe}? \\
dog=\text{PROX REAL come-via where}
\end{array}
\]

‘Where did this dog come from?’ (v2012-08-02-CB-04_0077)

(57) Au hurong komu atua ne pwi?

\[
\begin{array}{l}
au \emptyset \text{ hurong komu atua ne pwi}? \\
2SG \text{ REAL hear talk 1SG.POSS or \text{NEG}}
\end{array}
\]

‘Did you hear what I said, or not?’ (2011-03-15-AH_AV-01_0183)

Both polar and content interrogatives can be marked for irrealis if this category is independently triggered, for example by future temporal reference, but interrogative mood does not in itself trigger irrealis marking.

## 5 Discussion

As discussed in §1.2, Bybee claims that languages such as Koro, where a single form is used in a wide variety of irrealis contexts, do not in fact have a coherent grammaticalized irrealis category. In contrast, she claims that what appears to be a single morpheme in such languages is in fact two or more polysemous morphemes, each having grammaticalized in its current construction from some common source morpheme. The Koro data, however, provide strong evidence that in this language the irrealis does constitute a single morpheme with an invariant, albeit abstract, meaning across uses.
Let us first consider the formal data. Polysemous morphemes often exhibit divergent phonological or morpho-syntactic behavior. Take the polysemous *have* in English, mentioned earlier. In its obligation use it takes an infinitival complement, and often has a devoiced final consonant, whereas in its perfect aspect usage it takes a participial complement, and is often reduced to just the final consonant /v/. In contrast, Koro *k-* has consistent phonological form and morpho-syntactic characteristics across all of its uses. Morphologically, the pattern of inflection is the same across all uses. Verbs in Koro do not inflect, and this inflectional paradigm is restricted to irrealis, perfect, and proximate aspect–mood heads. Likewise, the suppletive second person singular form *a* occurs in all uses. Syntactically, the restriction against co-occurrence with negation holds across all uses. This is particularly telling since there is no semantic reason for this restriction, and in all its functions the irrealis can occur in the periphrastic negation construction with raising verb *nap* ‘can’. It is also noteworthy that *k-* occurs in exactly the same syntactic environment in all of its uses — unlike English *have*, it does not take different types of complement depending on which type of irrealis meaning it expresses. Lastly, as illustrated amply above, most of the uses of irrealis do not require any additional morpheme to specify the particular type of irrealis meaning. Indeed, a number of contexts do not allow any additional specifying morpheme to occur. This must be taken as evidence that the irrealis meaning expressed in each construction is contributed by the irrealis morpheme itself.

Further, this analysis seems to hold true for the whole Admiralties family. A cognate form with the same patterns of inflection and suppletion, and with roughly the same range of uses, is found in each of the other Admiralties languages for which sufficient data is available. This suggests that the current form and function of the irrealis have persevered for some time in the sub-group, and that this is not simply a recent idiosyncratic grammaticalization in Koro.

Turning now to semantics, we can note that a comparison of tables 1 and 4 above reveals that the Koro irrealis occurs in just those contexts predicted for a marker of temporal non-specificity. Namely, it occurs with future and prospective aspect, jussive modalities, conditional clauses, and past habitual aspect. Crucially, it is not triggered by negation, presupposition, uncertainty, or interrogative mood. These latter contexts are predicted to trigger irrealis marking for the ‘unrealized’ or ‘non-assertion’ types of irrealis, and they are reported to do so in a number of languages. The fact that Koro irrealis does not occur in these contexts suggests that neither of those characterizations captures its core meaning. I suggest, therefore, that the Koro irrealis encodes a meaning of ‘temporal non-specificity’.

The question remains, however, as to what exactly ‘temporal non-specificity’ is. It has been observed that what is common to all the uses of an irrealis like that in Koro is that no specific event is referred to. In the case of future or hypothetical events, they cannot be referred to because they do not exist, while in the case of past habituals, a set of iterated events is evoked, but no single instance is referred to directly. The meaning of temporal non-specificity therefore has nothing to do with how precisely an event is located in time (for example with a temporal adverbial such as ‘yesterday at 3:15 in the morning’), but has to do instead with whether the predicate refers to an instance of that event in the real world of the discourse. (I use the term ‘real world of the discourse’ to distinguish this from any possible worlds evoked, for example, by conditionals or deontic modals.) Baker and Travis (1997) provide a formal analysis of this notion of temporal non-specificity for

---

5 These are Paluai (Dineke Schokkin, p.c.), Lele (Juliane Böttger, p.c.), Loniu (Hamel 1994), Sivisa Titan (Bowern 2011), and Kele (Ross 2002).
Mohawk ‘future’ prefix \textit{v-}, which has a very similar range of functions to those of irrealis in Koro. Most importantly, like the Koro irrealis, the Mohawk so-called ‘future’ occurs in past habitual contexts. Borrowing Heim’s concept of Quantifier Indexing from the nominal domain, Baker and Travis argue that this morpheme in Mohawk indicates that the event variable of the verb undergoes Quantifier Indexing, and thus gets its quantificational force from the environment, rather than having its own inherent quantificational force. Whether this particular formal implementation is the most useful remains to be seen, but the analogy between the nominal and verbal domains is an apt one — a verbal category like that in Koro and Mohawk does indeed have a similar non-referential function to that of a non-specific indefinite morpheme in the noun phrase.

Finally, let us briefly compare Koro with Nanti, a language that has been argued to exhibit a prototypical reality status category, expressing a binary distinction between realized and unrealized events (Michael to appear). Table 5 compares the contexts of irrealis marking in the two languages. It can be seen from this table that the contexts that trigger irrealis marking in Koro and Nanti largely overlap. However, in past habitual clauses and under the scope of negation, the two languages pattern differently. Koro allows irrealis marking in past habitual clauses, but not under negation, while Nanti exhibits the opposite pattern. The question at issue is whether these are idiosyncratic differences, explicable only by reference to particular grammaticalization trajectories within each language, or whether the differences point to the existence of two internally-coherent semantic categories. Clearly, an examination of just two languages cannot settle this debate, but I argue that these data are consistent with an analysis that invokes two stable categories — ‘unrealized’ and ‘temporally non-specific’. Where the two languages both use irrealis marking, these are contexts that are both unrealized and temporally non-specific. Where marking in the two languages differs, namely with past habitual and negation, these are contexts that have different values for realization and temporal specificity. Michael makes a strong case that the irrealis category in Nanti is in fact a cohesive grammatical category that marks unrealized events, and the data in the current paper likewise support an analysis of Koro irrealis as an internally consistent category expressing temporal non-specificity. It remains to be seen whether similar analyses can be invoked to account for the apparently idiosyncratic patterning of irrealis morphemes in other languages.

<table>
<thead>
<tr>
<th>Semantics</th>
<th>Triggers irrealis in Nanti</th>
<th>Triggers irrealis in Koro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Deontic modality</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Conditionals</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Prospective, purposive</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Desiderative complement</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Interrogatives</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Past habitual</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Negation</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 5: Comparison of contexts that trigger irrealis marking in Koro (irrealis = temporally non-specific) and Nanti (irrealis = unrealized)
6 Conclusion

I have shown in this paper that Koro ‘irrealis’ morpheme k- occurs in a wide variety of environments, not all of which can be understood as expressing ‘unrealized’ events. I argue that this is because the category ‘irrealis’ in Koro instead has a core meaning of temporal non-specificity. In contrast to Bybee’s analysis of similar languages, I argue that the irrealis morpheme in Koro is a single morpheme with an invariant meaning across uses, and that it cannot be divided up into a number of polysemous morphemes with more specific meanings. When viewed in combination with a language such as Nanti, the Koro data suggest that there exist two distinct but stable notional domains that have been labeled ‘irrealis’ cross-linguistically — ‘unrealized’ and ‘temporally non-specific’. Future cross-linguistic research on the domain of reality status should treat these semantic categories separately, in the hopes of determining whether they are in fact valid cross-linguistically.

7 References

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Subjectification in the Development of Clitic Doubling: A Diachronic Study of Romanian and Spanish

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1 Introduction

This work focuses on a phenomenon commonly occurring in several Western Romance languages, Semitic languages, and the Balkan Sprachbund languages (Slavic, Greek, Macedonian, Albanian and Eastern Romance). The direct object of a simple transitive clause can be doubled by a coreferential pronominal clitic attaching to the verb, as illustrated by the following sentences:

(1) Romanian
   a. Preşedintele a convocat toţi delegaţii.
      president.DEF has assembled all delegate.PL.DEF
   b. Preşedintele i-a convocat pe toţi delegaţii.
      president.DEF CL.3PL.MASC has assembled DOM all delegate.PL.DEF
      ‘The president assembled all the delegates.’

(2) Albanian
   a. Ana lexoi librin.
      Ana read book.DEF
      ‘Ana read the book.’
   b. Ana e lexoi librin.
      Ana CL.3SG.MASC read book.DEF
      ‘Ana read the book.’
      (Kallulli 2008:230)

(3) Rioplatense Spanish
   La vas a llamar a Marta?
   CL.3SG.FEM will call DOM Marta?
   ‘Are you going to call Marta?’
In standard Romanian, as illustrated in (1b), as well as in Spanish (3b), a prepositional accusative differentially marks the instantiated direct object while a pronominal clitic that is coreferential with the direct object is also present. The data in (1-3) show that among the languages possessing some form of clitic doubling (hereafter CD) and differential object marking (hereafter DOM), Spanish in all its varieties is one of the few that, like Romanian, shows a juxtaposition of the two constructions. Further, Spanish is the language in which this pattern behaves most like that in Romanian, both in terms of form and function. On the other hand, there are languages like Albanian that have CD and no DOM. Many more languages have DOM and no CD, as Bossong has thoroughly documented (1985, 1991, 1998), but so far very few are found that have both.

The analysis pursued here operates on the assumption that prepositional accusative marking (or differential object marking) and clitic doubling should be seen as a single clause-level construction. This construction brings its own contribution to the clause independent of, yet semantically inheriting from its component parts. In Romanian, these two components gravitated towards each other based on their common high accessibility and their grounding in core transitivity. That is, *pe* is used with direct objects most likely to be prototypical patients, and follows the general rules of prototypical transitivity as posited in Hopper and Thompson (1980) and Næss (2007). von Heusinger and Kaiser (2010) find that the general properties of prototypical transitivity are also true of *a* in Spanish.

Therefore, in the current work, I extend my analysis of the evolution of this construction in Romanian to the study of a comparable Romance language, Spanish, concluding with a claim about the construction in all languages that have it: the intersection of the core transitivity scenario brought about by DOM, and the high accessibility scenario brought about by CD will result in this composite construction coming about. Nevertheless, the construction will not be functionally identical cross-linguistically. Further, Romanian CD-DOM is different from the CD-only construction in Romanian (and in Spanish), in addition to there being a marked functional difference between the two languages in the usage of the CD-DOM construction.

Taking a diachronic perspective, I will argue that subjectification is the driving force behind the grammaticalization of this construction; subjectification is the kind of semantic change that has been observed for the development of modals and causal connectives over time, as introduced by Traugott (1989, 1995, 1997, 2005), and explored by Sweetser (1990) and Sanders and Sweetser (2009),
Subjectification in the development of clitic doubling among others. Specifically, during grammaticalization, there is a progression from more propositional/ideational content, to more textual/discourse-structuring functions and meanings and finally to expressive/pragmatic functions and meanings associated with a given form. That is to say, grammatical and lexical items come to be expressions of *epistemicity* (Traugott 1989:32), reflecting speaker’s internal states, including beliefs, attitudes, etc. In addressing subjectification as key to the development of CD-DOM, I would like to further suggest that this sequence of semantic change also holds of constructionalization (Bybee 2003, Noël 2007), whereby constructions that are more expressive of propositional content unify over time to yield constructions that are more expressive of epistemic content.

In that vein, in Romanian there has been constructionalization further along a subjectification cline than in Spanish, resulting in a fully pragmatic construction in the modern language, while in Spanish the subjectification of the construction is slower, revealing an occasional glimpse of the pragmatic construction only in some newer varieties (such as is illustrated in Rioplatense Spanish in 3).

By observing the diachronic development and synchronic status of this construction in Romanian and Spanish, I will take this opportunity to challenge existing assumptions in modern syntax regarding the similar underlying structures of the construction cross-linguistically, (a common assumption when establishing similar formal syntactic projections). I will aim to show that while the construction is syntactically and morphologically similar in the two languages, it arose from two completely different diachronic constructionalization processes rooted in different lexical origins (specifically pertaining to the semantics of the prepositions *pe* and *a*), while maintaining similarity in function. I hope this opens the door to further detailed historical semantic reconstruction of the joint clitic doubling-differential marking construction in the few languages that possess it, such as Catalan, and to consider the typology of differential object marking from a semantic-pragmatic perspective.

The Romanian data is gathered from modern Romanian news sources, from examples found in the existing literature, and from a corpus compiled by the author\(^1\). Spanish examples come from Spanish popular media sources and from the existing literature (covering several Spanish varieties); the study also references one of the oldest manuscripts in Continental Spanish, the *Cantar de mio Çid*.

2 Two types of subjectification

There are two main views on subjectivity and subjectification: a conceptualist approach and a pragmatic approach (Nuyts 2001, Narrog 2012). The conceptualist

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\(^1\) The corpus contains 300,000 words, and includes multiple fiction and non-fiction works by Constantin Cantacuzino (1700s), Ion Creangă (late 1800s), and Mircea Eliade (early 1900s).
approach represents the interpretation of Langacker (1987, 2002, 2006), which defines subjectivity in terms of grounding and construal, with a more subjective stance consisting of an offstage construal of the conceptualizer and a more objective perspective placing the conceptualizer onstage. Thus, deictics such as I and you, are expressions that maximally objectify the grounded discourse participants, placing them within the immediate scope of predication (Langacker 2007). On the other hand the pragmatic approach, in the spirit of Traugott and Dasher (2002) and the aforementioned earlier work by Traugott, holds that subjectification is a tendency towards more expressive meanings from more propositional meanings, and thus Traugott’s approach is explicitly diachronically oriented, succeeding in putting forth generalizations about semantic change over time.

In this work, I utilize both notions of subjectification, but with a strong focus on Traugott’s version. Langacker’s notion explains the attenuation or bleaching that the component constructions undergo, while Traugott’s notion explains the epistemic transformation of the resulting construction. Further, subjectification in the sense of Traugott in this case results in deobjectivization in the sense of Langacker (2006). More precisely, the component construction $CD$ is highly grounded in the speech event, and as such its meaning is highly objective in the Langackarian sense. As deictic and referential expressions grammaticize into a construction whose use is shaped by discourse management, information structure, and epistemic stance, those lexical expressions forming part of that construction lose their relation to the ground. Thus, in the case of the doubling construction with object marking, deobjectivization in Langackarian terms, (that is, the loss of onstage status) goes hand in hand with subjectification in the Traugott sense. In short, deobjectivization is precisely what happens to pronouns when they become weak clitics in the doubling construction, as well as in general$^2$.

We can illustrate this process with an example from Romanian:

\begin{enumerate}
\item[(4) a.] \begin{flushright}
Îl iube\c{s}te.
\end{flushright}
\text{CL.3SG.MASC loves}
\text{‘(She) loves him.’}
\item[(4) b.] \begin{flushright}
Îl iube\c{s}te pe un b\c{a}i\c{a}t cu ochii negri.
\end{flushright}
\text{CL.3SG.MASC loves DOM a boy with eyes black}
\text{‘(She) loves a boy with dark eyes.’}
\item[(4) c.] \begin{flushright}
Iube\c{s}te un b\c{a}i\c{a}t cu ochii negri.
\end{flushright}
\text{loves a boy with eyes black}
\text{‘(She) loves a boy with dark eyes.’}
\end{enumerate}

$^2$ Note that becoming less objective does not automatically mean they are becoming more subjective. The loss of objective status for deictics does not in and of itself result in achieving subjective status. Subjectification is achieved by virtue of the construction being more pragmatically meaningful over time.
In (4a), the referent, referred to deictically with a pronoun, is in the immediate scope of predication, and the meaning of the pronoun is referential. In (4b), however, the pronoun is no longer referential, but acts to reinforce the direct object, which is referential. The construction in (4b) incorporating both DOM and CD is distinct from (4c) in enhancing prominence. Prominence, in the definition adopted by Hopper and Thompson (1980), Goldberg (2006), and others, is a general form of informational salience, triggered by some morphological or syntactic form, in the mind of the addressee. As Goldberg (2006:136) points out, both topical and focal constructions are prominence-enhancing, because they force to the foreground information, whether new or old, and distinguish it from presupposed or backgrounded information. Accordingly, CD-DOM performs both topical and focal functions, as well as myriad other prominence-enhancing functions.

In the following section, I will outline the semantics of the component constructions CD and DOM in Romanian and Spanish, and illustrate their subjectification as they unite into a single construction.

3 Constructional components in historical perspective

The two main components contributing to CD-DOM are discussed in this section, namely the Canonical Pronominal Construction (CPC) and Differential Object Marking (DOM).

Like other Romance languages, Romanian and Spanish transitive clauses can contain direct objects instantiated purely by means of a verb-adjoined weak pronoun (Gerlach 2002, Lambrecht 2004), which I will call here the canonical pronominal construction (CPC), as is illustrated in (4a). This trait is attested in Romanian from the earliest periods. Referents referred to by a clitic pronoun alone are highly accessible (Ariel 1988, 1990, 2001, inter alia), being placed very high on the accessibility scale relative to other forms of nominal forms (Ariel 1990:73). In Accessibility Theory, referring expressions are instructions for recoverability of referents, and this recoverability lies within the scope of mental accessibility of the particular form, whether a full noun phrase, a pronoun, or even a null expression. This way of categorizing referring expressions lines up well with Langacker’s view of onstage/offstage predication and grounding. Namely, clitics are highly grounded in the moment of discourse, as pronouns in general are argued to be (Langacker 2007). Thus, any construction involving only a clitic pronoun as a main argument is a construction whose meaning is lower in subjectivity: the referent, when expressed deictically, is maximally grounded in the external situation while providing minimal semantic information about the nature of the referent.

Also, like many languages with eroded case systems, Romanian retains a selective distribution of some case marking with certain direct objects. Namely, the dummy preposition pe (and its prior reflex pre), is used as the accusative case
marker for direct objects. From the earliest attestations, *pe* is used to mark direct objects highest in animacy, namely human nouns, deictic pronouns and anaphors. However, it is unclear when and why *pe* assumed this function. As the earliest written documents available with sufficient data illustrating DOM, the Sibiu manuscripts provide attestations of CD and DOM from 1551-53 (data from Hill & Tasmowski 2008). As a few sentences illustrate, at this historical juncture there is still a mix of *pe*- and non-*pe*-marked direct objects.

(5)  
\[
\text{Cine va primi } \text{pre voi}_{[+pe]} \text{, mine}_{[-pe]} \text{ primişte},
\]
\[
\text{who will receive pre you.pl me.acc receives }
\]
\[
\text{şi cine } \text{pre mine}_{[+pe]} \text{ primeşte}
\]
\[
\text{and who pre me.acc receives}
\]

‘He who receives you receives me, and he who receives me…’

Alone, *pe* was and continues to be semantically a licensor of animate direct objects in Romanian, a generalization thought to hold for many DOM languages. However, there was a period during which *pe*-marked and non-*pe*-marked human direct objects, including pronouns, were in mixed usage, as illustrated even within a single sentence in (5) above.

The most likely genesis for the *pe*-marking construction was proposed by Hatcher (1942), who suggests that *pe* marking arose out of intransitive constructions with verbs of attacking or violence, with the preposition phrase coupled with these verbs being reanalyzed as markers and the content of the prepositional phrase being reanalyzed as the direct object of a transitive sentence. If *pe* marking arose in this manner, with intransitives being reanalyzed as transitives starting with a small cluster of verbs that bring about sudden affect in their objects and spreading to other verbs, then the types of direct objects that are *pe*-marked are the type that tend to be affectees with those types of verbs. Lyons (1990) echoes this view of the origins of prepositionally marked direct objects as a form of adjunction, interpreting the Spanish analogue to *pe*, *a*, and the NP it introduces as an adjunct that reinforces or clarifies the reference of a null pro in the object position. However, this analogy with the Romanian construction may be only superficial in nature; although similar in discourse function, particularly in combination with clitic doubling, DOM in Romanian and in Spanish diverge when considering the diachronic dimension.

One important difference between DOM in Romanian and Spanish is its function in indirect object marking. That is, Spanish *a*-marking applies both to direct and indirect objects, while in Romanian *pe*-marking applies only to direct objects. This difference is owed in great part to the fact that Romanian is subject to grammatical changes typical of Balkan Sprachbund languages, while Spanish is not. It is a common feature of Balkan Sprachbund languages for there to be genitive-dative synchrony, such that the dative case comes to look more like the genitive case. This can result in ambiguity in Romanian (6a), whereas no such ambiguity exists in Spanish (6b-c):
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This similarity of form and function in Spanish direct and indirect object marking is not a matter of coincidence, and may be a clue to the origins of the DOM construction in Spanish, namely as an extension to direct object marking from indirect object marking. This hypothesis is tenable when considering the semantics of the prepositions involved. Semantically, *a* comes from a preposition of directed motion (meaning ‘to’ or ‘toward’) while *pe* comes from a preposition that captures trajector-landmark relations, namely ‘above’, ‘on’, or ‘onto’ (originally from *asupra* (Rom.), from Latin *super*). These prepositions, with these meanings are still used in these languages, their meanings not having been bleached. When taking into account the meaning of the prepositions themselves, *a* clearly expresses directed action or motion, rendering its object a recipient, while *pe* expresses contact, rendering its object an affected entity. In this way, thinking of *a* as originally an indirect object marker is plausible, given that indirect objects are usually recipients or goals of directed action and directed motion.

Thus, an extension to usage with direct objects in Spanish could be due to the construal of direct objects of transitive constructions as recipients of the action affecting them. On the other hand, even if Romanian had not undergone genitive-dative synchrony, it is unlikely that *pe* would have ever shown up as an indirect object marker, given the semantics of prepositional *pe* detailed above. What’s more, *a* appears as both a direct and indirect object marker much earlier in Spanish than *pe* appears in Romanian for direct objects\(^3\), signaling no plausible common source of this type of marking for the two Romance languages (if one wanted to argue a common influence in developing DOM, say from Latin or some common vulgar ancestor).

Finally, when used independently of a clitic doubling construction, *a* has much broader scope than *pe*, being used with all types of direct objects, often

\(^3\)The earliest written Spanish is from the *Cantar de mio Cid*, from sometime between 1195 and 1207, which is full of both direct and indirect object marking uses of *a*. On the other hand, the earliest written Romanian is from 1521 (“Neacșu’s letter”), which unfortunately does not happen to contain any tokens of *pe* or any instances of doubling. Thus, it would be impossible to state with certainty that Romanian had a Balkan type of unmarked doubling prior to 1521, or when marked doubling started to appear. However, it is likely that it had at least unmarked doubling given the status of other Balkan languages around that time, and given the shape of other contemporary Romanian languages, such as Istroromanian (cf. Zegrean 2012).
including inanimate ones. A without clitic doubling is also much more widespread in modern Spanish than pe without clitic doubling is in Romanian, a fact that is indicative of the different levels of entrenchment of the construction in the two languages.

Nevertheless, there are also many similarities between the two markers. Both a and pe tend to be used with animate, mostly human, direct objects, although there are, as mentioned, notable instances of non-human direct objects in Spanish. The exceptions, however, can be explained in accordance with principles of metonymy. For instance, both Spanish and Romanian allow DOM with animate referents other than humans, such as animals. This can be seen as an extension of DOM along the animacy scale to include non-human animate referents, while human referents remain the prototype, revealing an instance of category metonymy (Dancygier and Sweetser 2014). Further, Spanish, but not Romanian, also allows DOM with human-occupied regions, such as in the following examples:

(7) a. Debemos invadir a Namibia.
   ‘We should invade Namibia.’

b. Tuvieron que tomar a la ciudad.
   ‘They had to take the city.’

   (Kliffer 1984:196)

c. Yo lo quiero a mi país.
   ‘I love my country.’

   (Estigarribia 2006:124)

In these cases, the direct object metonymically refers to human referents. That is, when one invades a country or takes a city, one is in fact conquering the human inhabitants of those locations. Romanian does not allow this type of metonymic extension of pe-marked direct objects, and the Romanian versions of (7a-c) would not be grammatical; however, as mentioned, pe in Romanian is much younger than a in Spanish, and thus we can see this extension in Spanish as having had more time to develop. Further, given that in these cases the direct object is a location, this goes well with the directional motion sense of a, giving the sense that these locations are the endpoints of motion.

It has been argued that personal a acts as a marker of individuation, casting its function more in terms of construal than in terms of pragmatics (Kliffer 1984). Individuation, in Hopper and Thompson’s terms (1980) is defined as the conceptual distinctness of the object from the subject and from the background. Individuation also singles out animacy as a parameter, among several, with animate direct objects being more highly individuated than inanimate ones. If we take as a basis the hypothesis that DOM in Spanish spread from indirect object marking, then the mandatory humanness of the direct object comes naturally, since this is a general requirement of indirect objects. On this basis, though, the
path by which the humanness requirement came about is very different for Spanish and for Romanian: for Spanish, the prototypical object to be marked is the indirect object (necessarily human), and there was a spread to direct objects, while in Romanian the humanness requirement was imposed by the verb, since *pe*-marking started out as an adjoined prepositional phrase with intransitive sentences featuring verbs of high-affectedness pertaining specifically to human interaction.

4 Propositional functions

The similarities and differences detailed above between the two languages with respect to DOM are important to note when considering the pragmatics of the CD-DOM construction (which we call CD-*pe* in Romanian and CD-*a* in Spanish, and throughout CD-DOM to refer to both). Individually, in both languages, the CPC and the DOM and their respective semantic specifications discussed above would constitute, in Traugott’s subjectification transitions, the more propositional meanings of these constructions. On the other hand, the information-structuring and discourse-structuring functions, such as prominence and topicality (Kalluli 2008), referential anchoring (von Heusinger 2002), referential persistence (Chiriacescu & von Heusinger 2009), and high accessibility (Ariel 1988) all come to make up its textual and expressive meanings.

Although CD-*pe* has come to acquire expressive functions, nevertheless there are several contexts in which, I will argue, the CD-*pe* construction can still be considered as fulfilling a propositional function. These are the cases in which CD-*pe* is mandatory and, no non-CD-*pe* variant is available. When the direct object is a pronoun, a bare noun, a proper name, a bare demonstrative, a demonstrative adjective, a bare superlative, or a bare quantifier, the CD-*pe* construction is mandatory, and there is no variant available without CD-*pe*:

(8)

<table>
<thead>
<tr>
<th>Case</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pronouns</strong></td>
<td></td>
</tr>
<tr>
<td>a. Pronouns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Președintele *(m-)*a salutat <em>(pe) mine.</em></td>
</tr>
<tr>
<td></td>
<td>‘The president greeted me.’</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bare nouns</strong></td>
<td></td>
</tr>
<tr>
<td>b. Bare nouns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Președintele *(l-)*a salutat <em>(pe) delegat.</em></td>
</tr>
<tr>
<td></td>
<td>‘The president greeted the delegate.’</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Proper names</strong></td>
<td></td>
</tr>
<tr>
<td>c. Proper names</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Președintele *(l-)*a salutat <em>(pe) Ion.</em></td>
</tr>
<tr>
<td></td>
<td>‘The president greeted Ion.’</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bare demonstratives</strong></td>
<td></td>
</tr>
<tr>
<td>d. Bare demonstratives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Președintele *(l-)*a salutat <em>(pe) acela.</em></td>
</tr>
<tr>
<td></td>
<td>‘The president greeted that one.’</td>
</tr>
</tbody>
</table>
Partitive pronouns + adjectives

e.  Presedintele *(l-)*a salutat *(pe) cel înalt.
   ‘The president greeted the tall one.’

Bare superlatives

f.  Presedintele *(l-)*a salutat *(pe) cel mai înalt.
   ‘The president greeted the tallest one.’

Bare quantifiers

g.  Presedintele *(l-)*a salutat *(pe) fiecare.
   ‘The president greeted each (of them).’

This is strikingly different from Spanish, in which by and large the CD-a variant alternates with the non-CD-a variant, notwithstanding regional and dialectal differences in distribution as well as variations in perceived degrees of acceptability. In this regard, for the specific set of direct objects detailed in (8), CD-pe has a grammaticalized non-pragmatic form (alongside the pragmatic usage to be detailed below in (9)). On the other hand, in Spanish use of CD-a with all non-pronominal direct objects is pragmatically-motivated (although the range of direct object types is more limited); this means that in Spanish there is no direct object type for which CD-a is obligatory, and that those direct objects with which it can occur can have alternatives, either as a-only or with no marking at all.4

Additionally, CD-pe also has a pragmatic usage: when the direct object in Romanian is a modified definite noun, an indefinite noun5, a proper name, a demonstrative NP, a superlative NP, or a quantified NP, the speaker has a choice between a CD-pe and a non-CD-pe variant on the same utterance, with different pragmatic effects:

Modified definites

(9)  a.  Presedintele *(l-)*a salutat *(pe) delegatul înalt.
   ‘The president greeted the tall delegate.’

---

4 With the striking exception, cross-dialectally, of use with pronouns, with which CD-a is mandatory, and no a-only variant or zero-marking variant is available. This goes well with the hypothesis that CD-DOM has its beginnings in a high accessibility scenario, which pronouns fulfill because they are deictic, and thus maximally accessible. However, this obligatory use is isolated to personal pronouns, not all deictics, thus making it a constraint specific to pronouns.

5 By default an indefinite noun in a CD-pe clause takes a specific reading, or as others like to argue, a referential reading (Anagnostopoulou & Giannakidou 1995). The specificity disambiguation effects of CD with indefinites is thoroughly discussed in von Heusinger (2002) and Leonetti (2003), among others.
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Indefinites (with and without modification)

b. Președintele (l-)a salutat (pe) un delegat înalt.
   ‘The president greeted a tall delegate.’

Demonstrative nouns

c. Președintele (l-)a salutat (pe) acel delegat.
   ‘The president greeted that delegate.’

Superlative NPs

d. Președintele (l-)a salutat (pe) cel mai înalt delegat.
   ‘The president greeted the tallest delegate.’

Quantified NPs

e. Președintele (l-)a salutat (pe) fiecare delegat.
   ‘The president greeted each delegate.’

In Spanish, the same alternations are available for this class of direct objects for CD-a, although their proportion in spoken language is quite lower than in Romanian.

Considering the data in (8) and (9) above, we are left to wonder what natural categories these two types of direct objects fall into. The types in (8) have in common the fact that most are fairly high on the accessibility scale by being deictic expressions. Especially for (8d-g), one needs to be present in the context of conversation to know who is being referred to. The types in (9) have in common several features: they are lower on the accessibility scale, they represent nominal expressions that are more semantically robust, and they can reconstruct referents in the minds of addressees without recourse to context. For this reason, the CD-pe construction is mandatory with the former and optional with the latter. This optionality allows the specialization of CD-pe as a construction that, when chosen by speakers, expresses more than the content of the sentence. In short, CD-pe has developed expressive functions.

5 Expressive functions

I define CD-pe’s expressive function primarily in terms of information structuring effects. In Traugott’s terms, propositional meanings are those based in the external described situation, and when the meaning of a lexeme or construction changes, it changes from this latter type of meaning to one based on the internal described situation (evaluative/perceptual/cognitive) (1989:34). Traditionally, the focus has been on the meaning change of lexical items, such as modal auxiliaries and modal adverbs, and the findings reveal change in the degree of epistemicity, as well as shifts from the sociophysical domain to the emotional and psychological domain (Sweetser 1984, 1990).
In this work, I am exploring the semantic change involved in the development of larger multiword constructions with loci across the clause. Additionally, I would like to suggest that constructions whose sole purpose is to create informational asymmetry in the mind of the addressee, i.e., information-structure constructions, are constructions that by definition serve expressive purposes. When creating focus, for instance, the construction captures the speaker’s relative prioritization of that piece of information over all others in the utterance. The \textit{CD-pe} and \textit{CD-a} constructions also bring with the additional speaker-internal meanings, such as the higher degree to which the speaker construes the direct object to be affected by the subject, the higher degree of importance the affectedness of the direct object has to the outcome of things, and the higher degree to which the speaker believes the content of the sentence matters to the rest of the conversation, or to the immediate stretch of talk. These are not properties of the lexical verbs, or of the compositional semantics of the sentence independent of the \textit{CD-DOM}; rather, \textit{CD-DOM} alone brings about these effects.

The sentences in (10) and the subsequent discussion illustrate the difference between \textit{CD-pe} constructions and its alternatives:

\begin{enumerate}
\item \textit{Preşedintele a convocat toţi delegaţii.} \\
\text{president.DEF has assembled all delegates.DEF}
\item \textit{Preşedintele i-a convocat pe toţi delegaţii.} \\
\text{president.DEF CL.3PL.MASC-DOM has assembled DOM all delegates.DEF}
\item \textit{Preşedintele a convocat pe toţi delegaţii.} \\
\text{president.DEF has assembled DOM all delegates.DEF} \text{‘The president assembled all the delegates.’}
\item \textit{Preşedintele i-a convocat.} \\
\text{president.DEF CL.3PL.MASC-DOM has assembled \text{‘The president assembled them.’}}
\item \textit{*Preşedintele a convocat ţi /-i.} \\
\text{president.DEF has assembled pro.3PL.MASC / CL.3PL.MASC} \text{(As ‘The president assembled them.’)}
\end{enumerate}

(10b) has a prominence-raising effect relative to (10a). Thus, the relationship between (10a) and (10b) is one of constructional alternation: they are in complementary distribution with respect to pragmatic force. The difference between (10b) and (10c), on the other hand, is more subtle. The latter represents a remnant from a previous constructional stage and occurs less frequently than \textit{CD-pe}. Its equivalent in Spanish, however, is much more common, because \textit{CD-a} has not taken hold quite as firmly in Spanish, and thus sentences such as (10c) are
more often found in Spanish where in Romanian formulations such as in (10b) would be preferred where allowed.

The current analysis, which assumes the merger of CPC with DOM, suggests that the evolution of (10b) out of the merger of (10d) with (10c) represents the leap from the mere proposition-expressing status of pe-only constructions to the expressive status of CD-pe. In uttering (10c), a speaker in not necessarily providing an addressee with any information as to his relative prioritization of information, or the degree of importance the proposition may have, either in general, or to the future of the conversation. It also does not provide much in the way of indicating high affectedness on the direct object. This is because pe-marking that occurs with human direct objects is unsurprising and an unmarked form of expression (human objects are regularly pe-marked). In uttering the CD-pe version in (10b), however, a speaker has already given consideration to the relative degree of accessibility of the referent in the mind of the speaker. The additional doubling with a clitic goes above the expected differential marking of human objects, and represents a marked form.

From the point of view of the epistemic state of the speaker, when one uses CD-pe, one is also delivering information with much more certainty than otherwise, as one is relying on both one’s own knowledge and the knowledge the addressee is assumed to share. Thus, there is certainty not about the truth of the state of affairs described, but about the degree to which the addressee is familiar with it, signaling a certain degree of intersubjectivity. This comes about most strikingly with specific indefinite noun phrases. Pe-marking has been documented most frequently in the literature using evidence from this type of direct object (Farkas 1978, Dobrovie-Sorin 1994, von Heusinger 2002, 2008). However, in the bigger picture presented in the current work, after contextualizing indefinites in a broader range of direct objects as lain out in (8) and (9), we see that indefinites achieve high specificity when coupled with CD-pe precisely because indefinites are naturally low on the accessibility scale, and CD-pe has the effect of rendering them more prominent, and hence more accessible. The semantic contrast between the accessibility level of indefinites and that of CD-pe is more easily noticed than it is when nominal expressions are higher up on the accessibility scale. Thus, indefinites achieve a specific reading with CD-pe, since specificity is nothing more than the certainty of the speaker that he and the addressee have mental access to the same referent (or at least, in producing the utterance, the speaker is achieving drawing the attention of the addressee to the referent). Thus, we explain specificity not with a specificity operator or feature present on indefinite DPs, but rather as a pragmatic effect that results when CD-pe, itself a meaningful grammatical construction imbued with a semantics and pragmatics, couples with a nominal expression low on the accessibility scale. The striking contrast between the high accessibility of one versus the low accessibility of another is what yields, in our eyes, the (epi)phenomenon that is specificity.

Because much of the time CD-pe prominence manifests as topicality, it carries with it the implication that more information is to follow pertaining to
some portion of the CD-pe sentence (which is not always necessarily the direct object referent, but may be the predicate, or the subject, as the textual analysis below will show). This is a feature of the spoken language, since the speaker has live feedback from the addressee as to their knowledge state, and as well is likely to know the addressee, and hence have access to his knowledge state. In the written language, these knowledge-structuring functions manifest as text-structuring functions, which will be detailed below.

5 Textual Functions

In this section I will detail the range of textual functions of the construction, which build on the expressive functions, using data from the modern language.

CD-pe is very common in news headlines. This trend is consonant with the function of CD-pe as signaling referential persistence, which is defined as “the number of occurrences of co-referential expression in the following text (Chiriacescu and von Heusinger 2009:2).” This idea is based on the notion of topic continuity by Givón (1981), in which the notion of topic is extended beyond the sentence and into the larger discourse. With this notion of topic continuity, we observe that news headlines serve to give a summary of the article to come, and pique the interest of the reader enough to want to read more. Thus, the CD-pe construction in headlines serves to establish the referent that is expected to persist in the body of the article.

(11) Culoarea apei din Marea Neagra se schimba. Fenomenul care i-a surprins pe specialiști NASA. ‘The color of the Black Sea is changing. The phenomenon that surprised NASA specialists.’

(12) Gluma hilară care l-a facut pe un bărbat din California să înoate desperat către fârm.6 ‘The hilarious joke that made a California man swim frantically towards the shore.’

These headlines establish topics to be continued in the body of the text. Chiriacescu (2010) also finds with experimental data that, when posed with a piece of text introducing a topic with CD-pe, that topic is more likely to be re-introduced several sentences later. Referential persistence is best illustrated in longer stretches of text. Below is a fragment from a news article from a Romanian news source describing a local murder case. The function of CD-pe as a text

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structuring device, introducing and sustaining discourse topics, is illustrated with the example in Text 1⁷:

**Text 1** News story

1. *Un tânăr de 30 de ani din localitate l-a omorât pe un bărbat de 48 de ani chiar într-unul din cimitirele din Axente Sever.*
   
   A young man of 30 from that town killed a 48-year-old man right in one of the cemeteries of Axente Sever.
   
   **CD-pe establishes direct object as discourse topic, likely to become subsequent subject**

2. *Bărbatul care a fost omorât era din Țapu și venise la Axente Sever. Criminalul se întorcea acasă, iar la un moment dat a izbucnit un conflict între cei doi.*
   
   The man who was killed was from Tapu and had come to Axente Sever. The killer was returning home, and suddenly conflict erupted between the two men.
   
   **Previous direct object now subject**

3. *Tânărul de 30 de ani i-a aplicat mai multe lovituri, l-a înjunghiat, după care l-a târât în cimitir și l-a lovit cu capul de una dintre cruci.*
   
   The 30-year-old man delivered several blows (to him), stabbed him, and dragged him into the cemetery and hit his head against a stone cross.
   
   **Referential persistence: topic sustained with CPC**

4. *Chiar mama criminalului a fost cea care l-a descoperit pe bărbatul omorât și a sunat de urgență la Poliție.*
   
   It was the killer’s mother who discovered the killed man and called the police.
   
   **Topic refreshed with additional use of CD-pe**

The discourse structuring effects achieved by the ‘CD-pe sandwich’ in the text above are typical of the news genre. Authors of news stories make initial assumptions about the knowledge status of the reader, and take this assumption as a starting point for the presentation of the content of the text. The use of reference strategies that manipulate accessibility is one way to achieve this strategic presentation. The reader is not assumed to know anything about the topic beforehand (a striking difference from CD-pe use in conversation), but the first CD-pe is establishing the topic and promising relevance later in the story.

In this sample text, it is CD-pe which is introducing and more importantly sustaining the discourse topic. This matches the findings of Chiriacescu (2010), who finds that topics are more likely to be sustained when introduced with CD-pe. Here, we see that CD-pe has both topic-establishing and topic-sustaining functions. As such, CD-pe is fulfilling the textual functions predicted by the subjectification cline, as proposed in the current work.

6 Romanian and Spanish CD-DOM in comparative perspective

The resulting construction from the unification of CPC and DOM into CD-DOM, while present in both Romanian and Spanish, is quite different functionally and distributionally. Firstly, CD-\textit{pe} is much more common in Romanian than CD-\textit{a} is in Spanish, regardless of dialect or genre. When they do occur in Spanish, however, the pragmatic implications detailed above for Romanian are also present. In Spanish also, the diachronic conditions were ripe for the formation of a CD-\textit{a} construction once \textit{a} hypothetically spread from indirect to direct objects. While it developed along the same subjectification cline, it never reached the full textual structuring function it did in Romanian; that is, the same referential persistence phenomenon cannot be achieved with CD-\textit{a} as was detailed for CD-\textit{pe} in Section 5. CD-\textit{a} use in Spanish is relatively more unpredictable (no texts of the kind illustrated for Romanian can be found as easily, although abundant in Romanian), and much of the use of CD-\textit{a} is still subject to dialectal variability in the many Spanish varieties and to acceptability judgments. When it appears, however, (usually in spoken conversation), it serves the same expressive functions as in Romanian: an indication of high degree of shared accessibility to the referent between speaker and addressee, a raised degree of affectedness on the direct object, and a raised degree of importance or salience attributed to the event expressed by the sentence. This suggests that, although older, CD-\textit{a} has not yet come to acquire the same textual function in Spanish.

A comparative dialectal study of Spanish is needed, with access to both spoken and written texts, to fully understand the breadth of pragmatic development of the construction. Another important phenomenon of interest, which occurs in some varieties of Spanish, but not in Continental Spanish, nor in Romanian, is that of unmarked clitic doubling, such as the following:

(13) \textit{Yo lo voy a comprar el diario justo antes de subir.}

‘I will buy the newspaper just before coming upstairs.’

(Porteño Spanish (Argentina), Belloro 2007:16, from Suñer 1988)

This type of doubling seems to occur only with inanimate direct objects, keeping \textit{a}-marking exclusively for animate objects. This construction, however, may have arisen independently, and possibly stems from an object right-dislocation construction instead of an object-marking strategy. More investigation is needed to see if the intonational contour is consistent with that of right-dislocation, and also to see just how widespread this construction is. It is worth tracing the origins of this construction as well, since in most discussions this construction is simply thought of as a variant of CD-\textit{a}.

7 Conclusions and future directions

We have explored Traugott’s concept of subjectification in the process of historical construction formation in Romanian, while also considering an
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analogous construction in Spanish. The study tracked the make-up of a new construction, which developed expressive and textual functions from two component constructions, CPC and DOM, each of which continue to exist in the languages and are grounded in propositional, content-expressing functions. An argument was made for the consideration of information structure constructions as innately expressive, given that they reflect the inner world of the speaker, namely, the speaker’s relative prioritization of information for the outcome of the events described. For future research, a broad corpus study encompassing both spoken and written data is called for in order to discern the precise degree of entrenchment of CD-a. A comparative historical study would be highly valuable, considering that the literature offers little treatment of the semantics and pragmatics of this construction, and still treats it as surface manifestations of the same functional syntactic projections of clitics. This exploration of CD-DOM constructions has given a glimpse into the subtler semantic and apparent distributional differences in the usage of the construction in two Romance languages.

References


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Subjectification in the development of clitic doubling


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Reportativity, (not-)at-issueness, and assertion

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1 Introduction

Evidential meaning (of grammatical evidentials) is generally analyzed as a type of not-at-issue meaning.¹ But what kind of not-at-issue meaning is it? The current contenders are: presupposition (of an otherwise modal operator) (e.g., Izvorski (1997), Matthewson et al. (2007)), illocutionary modifier (Faller 2002), or conventional implicature (Potts 2007b; McCready 2010). This paper reviews the empirical properties of each of these types of meaning and evaluates the Cuzco Quechua reportative against them. It argues in particular against a recent proposal by McCready (2010) to recast Faller’s (2002) illocutionary analysis of the reportative as a conventional implicature. The reason a conventional implicature analysis cannot work is that a sentence with the reportative does not assert \( p \) – the speaker does not convey that they believe \( p \) – but nevertheless proffers \( p \) as at-issue content.

The Cuzco Quechua enclitic \( =si \) (allomorph \( =s \)) is part of a paradigm consisting of three² enclitics with evidential functions, illustrated in (1) and (2).

(1) a. para-mu-sha-n=si
   rain-CISL-PROG-3=REP
   \( p=\text{‘It is raining.’} \)
   EV=\( s \) was told that it is raining
b. para-mu-sha-n=mi/=chá
   rain-CISL-PROG-3=BPG/CONJ
   \( p=\text{‘It is raining.’} \)
   EV=\( s \) has direct evidence for the claim that it is raining/conjectures that it might be raining

(2) mana=\( s \) phalay-ta ati-n=chu, ichaqa qucha-man=\( si \) apa-n-ku urqu
    not=REP fly-ACC can-3=NEG but lake-ILLA=REP take-3-PL mountain
    pata-cha-man
top-DIM-ILLA

¹In giving the translations of the Quechua examples, the evidential value EV is presented on a separate line from the propositional content \( p \). Abbreviations used in glosses: 1,2,3: 1st, 2nd, 3rd person; 1o: 1st person object; 3S2o: 3rd person subject 2nd person object; ABL: ablative; ACC: accusative; ADD: additive; AG: agentive; AUG: augmentative; BEN: benefactive; BPG: best possible grounds; CAUS: causative; CERT: certainty; CISL: cislocative; COM: comitative; COND: conditional; CONJ: conjecture; CONTR: contrastive; DIM: diminuitive; DISC: discontinuative; FUT: future; HORT: hortative; ILLA: illative; IMPR: impressive; INCL: inclusive; INCH: inchoative; LIM: limitative; LOC: locative; NEG: negation; NMLZ: nominalizer; NX.PST: non-experienced past; PL: plural; POL: polarity; PP: past participle; PROG: progressive; PST: past; REP: reportative; TOP: topic.
²Faller (2011) also includes the enclitic combination chu-sina in the set of evidential enclitics.
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\[ p = \text{‘It cannot fly, but they take it to the lake, to the top of a small mountain.’} \]

\( \text{EV: s was told that } p \) \hspace{1cm} \text{(Conversation)}

The arguments against analyzing the Cuzco Quechua reportative as contributing at-issue meaning or a presupposition have mostly been made before, but it is useful to have these repeated to allow direct comparison with the argument against analyzing it as contributing a conventional implicature. Taken together with its ability to take question acts in its scope (see section 2.3), the impossibility of analyzing this evidential as contributing neither a presupposition nor a conventional implicature strengthens my analysis of it as an illocutionary modifier (Faller 2002). Apart from making this point for the Cuzco Quechua reportative, the main aim of this paper is to demonstrate the need to study the empirical properties, in particular the projection behavior, of an element carefully before classifying it as a particular meaning type. Indeed, just as Potts (2005, 2007a) has (re-)established conventional implicatures as a distinguished class of meaning based on their empirical differences with presuppositions, I believe a case is to be made for distinguishing illocutionary meaning as a separate type of not-at-issue meaning based on empirical differences with both presuppositions and conventional implicatures.

In the remainder of this introduction, I briefly review my basic theoretical assumptions. I assume a fairly traditional view of speech acts, according to which there is a grammatical level of meaning that encodes aspects of illocutionary force, \( F \) (Searle 1969; Vanderveken 1990). \( F \) applies to propositional content \( p \) to form a speech act \( F(p) \). Linguistic devices, including sentence mood, intonation, performative verbs, and particles contribute to \( F \), although what speech act is performed in any particular utterance situation will also depend on context and speaker intentions. Declarative sentence mood typically correlates with assertive illocutionary force (Sadock and Zwicky 1985; Vanderveken 1990), and so a typical utterance \( u \) of the sentence \( \text{It is raining} \) will be an assertion. In Searle and Vanderveken’s framework of speech acts, \( F \) consists of six components, including illocutionary point and a set of felicity conditions. I will here only refer to sincerity conditions \( \text{SINC} \), which require the speaker to have a particular attitude towards \( p \) in order for the speech act to be sincere. For example, an assertion of \( \text{It is raining} \) by speaker \( s \) has the sincerity condition that \( s \) believes \( p \). Schematically, we can represent these different components as in (3).³

\[
\begin{align*}
\text{(3)} & \quad \text{a. } u: \text{“It is raining.”} \\
& \quad \text{b. } p = \text{It is raining} \\
& \quad \text{c. } \text{ASSERT}_s(\text{it is raining)} \\
& \quad \text{d. SINC: speaker believes } p \\
\end{align*}
\]

Illocutionary modifiers can add additional conditions to the speech act. For example, the adverb \textit{alas} adds the sincerity condition that the speaker laments that \( p \) (Vanderveken 1990:150):

\[
\begin{align*}
\text{(4)} & \quad \text{a. } u: \text{“Alas, it is raining.”} \\
& \quad \text{b. } p = \text{It is raining} \\
\end{align*}
\]

³I display the sincerity conditions on a separate line in (3) for better readability, though they should be considered a component of \text{ASSERT}.
Faller (2002) develops an analysis of the CQ evidentials in (1) as illocutionary modifiers which contribute a sincerity condition. For example, the reportative adds a sincerity condition that the speaker has been told that \( p \) by someone else. Because the relationship between \( F \) and \( p \) is that of functor\( (\text{argument}) \), this analysis makes the prediction that evidentials have wide scope with respect to elements that contribute to \( p \). It also allows for the possibility of scope interactions with other illocutionary operators.

In recent years, the term at-issue has been used to refer to \( p \), the proposition expressed, or Grice’s ‘what is said’ (Potts 2005:7). This term captures the idea that at-issue content carries the main theme of the discourse or controversial propositions, while propositions conveyed as presuppositions or conventional implicatures are backgrounded or de-emphasized and not taken to be controversial. Simons et al. (2011) make this idea more precise by linking it to Roberts’ (1996) question under discussion (QUD) as in (5) (simplified, as it only considers assertions, not questions).

\[(5)\text{ A proposition } p \text{ is at-issue relative to a question } Q \text{ iff it entails a partial or complete answer to QUD.}\]

For example, in the context of the question in (6a), only the proposition expressed by the main clause of (6a), \textit{I spent part of every summer \ldots with my grandmother} entails an answer to the QUD. This proposition is therefore at-issue. But the proposition expressed by the relative clause \textit{My grandmother lived in \ldots Boston} does not entail an answer to (6a), so is not at-issue.

\[(6)\text{ a. Where did you spend your summers as a child?}\n\text{ b. I spent part of every summer until I was ten with my grandmother, who lived in a working-class suburb of Boston. (Judith Thurman, ‘Doing it in the road’, The New Yorker, June 10, 2002, p. 86, cited in Potts (2005:6)).}\]

There are various types of not-at-issue meanings, including presuppositions, conventional implicatures, and conversational implicatures. I will not discuss conversational implicatures in this paper as the meaning conveyed by the CQ evidentials is uncontroversially lexically encoded and so analyzing it as a conversational implicature is out of the question. In contrast, presuppositions\(^4\) and conventional implicatures are, like at-issue meaning, encoded by lexical items or constructions.

Presuppositions are propositions that, under normal circumstances, are taken by the speaker to be part of the common ground, that is, taken as true by both speaker and addressee.\(^5\) As such, they convey old information and this information is backgrounded with respect to the at-issue content. For example, (7a) presupposes (7b).

\[(7)\text{ a. Conner stopped smoking.}\]

\(^4\)Conventional presuppositions, to be precise. Potts (2005) also distinguishes a class of conversationally triggered presuppositions.

\(^5\)If a presupposition is not in the common ground, it can often be accommodated, that is, the addressee will accept it as true despite being new information to them.
b. Conner used to smoke.

Conventional implicatures, first identified as a separate class of meanings by Grice (1989), have experienced a renewed surge of interest in linguistics after Potts (2005) convincingly demonstrated that they are indeed a distinguishable class of meanings. Potts identified a set of properties, to be discussed in more detail in section 2, that set them apart from both at-issue content and presuppositions. Conventional implicatures are commitments that are made by the speaker of the utterance, and are logically and compositionally independent of the at-issue entailments (Potts 2005:11). Moreover, conventional implicatures typically convey new information. Potts identifies two broad classes of conventional implicatures that exhibit these characteristics: supplements, exemplified in (8), and expressives, (9).

(8) a. As-parentheticals:
Ames was, **as the press reported**, a successful spy.

   b. Supplementary relative:
Ames, **who stole from the FBI**, is now behind bars.

(9) a. Expressive adjectives:
I have to mow the **damn** lawn.

   b. Honorifics:
Sensei-wa eigo ga o-wakari-ni nar-u,
the.teacher-SUBJ English NOM HON-understanding-DAT become-IMP

   ‘The teacher understands English.’ (Toribo (1990), cited in Potts (2005:180))

In the next section, I will look in detail at the empirical properties that distinguish the three types of conventional not-at-issue meanings from each other and from at-issue content.

2 Properties of conventional implicatures, presuppositions, illocutionary modifiers (vs. at-issue meaning)

Illocutionary modifiers, conventional implicatures, and presuppositions all have distinct characteristics that follow from their particular way of contributing meaning. They have in common that they are not at-issue, that is, they do not answer the QUD, and as a consequence, none of them are directly deniable. Presuppositions, as commented above, contribute information that is assumed to be known already by the interlocutors, and as a consequence are backgrounded with respect to at-issue content. However, the truth of the at-issue content is dependent on the truth of any presuppositions in as much as the truth of the at-issue content cannot be evaluated (that is, is undefined), when the presuppositions are false. Because presuppositions are assumed to be shared knowledge, they cannot ‘simultaneously be presented as denied, or hypothesized or queried’ (Chierchia and McConnell-Ginet 2000:352). This explains why they **project** from so-called holes like negation, questions, and the antecedents of

---

6The properties identified by Potts as classifying conventional implicatures, especially speaker-orientation, are not uncontroversial (Amaral et al. 2007), but for the purposes of this paper, I will assume that an element that meets these can be classed as a conventional implicature.
* if-clauses. However, presuppositions do not project from so-called plugs like verbs of saying or propositional attitudes.

In contrast, conventional implicatures are truth-conditionally independent of the truth value of the at-issue content. They are speaker-oriented and cannot be backgrounded like presuppositions. They are scopally inert, that is they do not interact with at-issue elements at all, resulting in them projecting from both holes and plugs. As we will see in section 3, Potts captures these properties by postulating that conventional implicatures occupy a meaning dimension that is independent from the at-issue dimension: \(<\text{at-issue content},\text{conventional implicatures}>\).

Illocutionary modifiers contribute felicity conditions to the speech act level meaning. Speech act level meaning \(F\) is at a hierarchically higher level of meaning than at-issue content \(p\) in that \(F\) takes \(p\) as its argument: \(F(p)\). It follows from this that illocutionary modifiers have wide scope over any at-issue level operator. That is, they cannot embed (unless, one admits, with Krifka (2014), embedded speech acts). If, as in the case of sincerity conditions, they index someone’s attitude/mental state, it will be that of a speech act participant, that is, speaker or addressee.

I will look at each of these properties for the Cuzco Quechua reportative in comparison with English illocutionary modifiers such as *alas*, and typical conventional implicature and presuppositional elements. It will emerge that the reportative behaves in the same way as recognized illocutionary modifiers and that both types of element share key properties with conventional implicatures, which makes an analysis of these elements as conventional implicatures not implausible. However, there are also significant differences, especially regarding their projection behaviour, which argue against assimilating them to conventional implicatures. Moreover, I will argue in section 3 that existing analyses of conventional implicatures cannot account for the Cuzco Quechua reportative because they either require that the speaker is committed to \(p\), or that the proposition conveyed by \(p\) is not at-issue. The speech act analysis of this evidential captures that \(p\) is not asserted but still proffered as at-issue content.

### 2.1 Answering the QUD and direct denial

By definition, not-at-issue elements cannot provide an answer to the QUD. As they do not contribute to what is under discussion, they can also not be the target of direct disagreements such as *That’s not true*. In order to disagree with not-at-issue content, more specialised forms need to be used, such as, *Well, yes, but ...* (Karttunen and Peters (1979), cited in Potts (2005:51)), *hey, wait a minute*, etc. The ‘Hey, wait a minute’ test is illustrated for the existence presupposition of the definite NP *the king of France* in (10) (von Fintel 2004). As indicated, only the presupposition of (10a) that there is a King of France can be denied with *Hey, wait a minute*, whereas *That’s not true* can only access the at-issue content that he attended APEC.

\[
(10)\quad\begin{align*}
a&: \text{The king of France attended the APEC conference this week.} \\
b&: \text{Hey, wait a minute – I had no idea that France is still a monarchy.} \\
c&: \text{‘Hey, wait a minute – I had no idea that he was at that conference.} \\
d&: \text{That’s not true – He wasn’t at that conference.}
\end{align*}
\]
e. C': #That’s not true – France isn’t a monarchy.

Applying this test to conventional implicatures and illocutionary modifiers confirms that they also do not contribute to at-issue content. Consider (11a). The supplementary relative who stole from the FBI and the illocutionary modifier alas cannot be denied with the direct rebuttal That’s not true, but can be questioned with Hey, wait a minute.\(^7\)

(11) a. Alas, Ames, who stole from the FBI, is now behind bars.

b. That’s not true – He’s not in prison./#He didn’t steal from the FBI./#You’re not really sad about him being in prison.

c. Hey, wait a minute – He didn’t steal from the FBI./ You’re not really sad about him being in prison./#He’s not in prison.

The Cuzco Quechua reportative =si is also not at-issue, as it does not entail an answer to the QUD. Thus, only the proposition It cannot fly in (12b), not the claim that the speaker was told this, entails an answer to the QUD in (12a).

(12) a. phalay-ta atin=chu
fly-ACC can=POL

‘Can it fly?’ (Constructed)

b. mana=s phalay-ta ati-n=chu
not=REP fly-ACC can-3=NEG

p=’It cannot fly . . . ‘

EV: s was told that p (Conversation)

As expected, the reportative meaning can also not be directly denied. (13b), but not (13a), is a felicitous denial of (12b).\(^8\)

(13) a. mana=n chiqaq=chu ni pi=pas chay-ta willa-ra-sunki=chu
not=BPG true=NEG no who=ADD this-ACC tell-PST-3S2O=NEG

‘That’s not true. Nobody told you this.’

b. mana=n chiqaq=chu phalay-ta=puni=n ati-n
not=BPG true=NEG fly-ACC=CERT=BPG can-3

‘That’s not true. It can definitely fly.’

Having established that the Cuzco Quechua reportative is not at-issue, let us now turn to the other properties.

2.2 (In)dependence of truth values

One of the hallmarks of conventional implicatures is that their truth value is completely independent of that of their host sentence. In contrast, presuppositions must be assumed to

\(^7\)Though see Potts (2012) for examples in which a conventional implicature can also be denied directly.

\(^8\)I have currently no data that would correspond to the ‘Hey wait a minute’ test. However, the inability to be targeted by direct denials seems sufficient for concluding that the reportative is not at-issue.
be true in order for their host sentence to have a truth value. Thus, as shown in (14) it is not possible to deny the truth of a presupposition while at the same time assenting to the truth of the at-issue content.

(14)  
   a. A: Conner **stopped** smoking.  
   b. B: #That’s great news, but he didn’t actually smoke.

In contrast, it is fine to deny the truth of a conventional implicature while assenting to the truth of the at-issue proposition, as shown in (15).

(15)  
   a. A: Ames, **who stole from the FBI**, is now behind bars.  
   b. B: That’s great news, but he stole from the CIA, you know.

The illocutionary modifier **alas** and the Cuzco Quechua reportative pattern with conventional implicatures, as shown in (16) and (17), respectively; that is, it is possible to assent to \( p \) while denying the contribution of these two markers.

(16)  
   b. B: Right, so we’re only 5 then. But be honest, you are not really sad that she’s not here.

(17)  
   a. A: Juan=si vaka-ta=qa suwa-sqa  
       Juan=REP cow-ACC=TOP steal-NX.PST  
       \( p=’Juan stole the cow.’ \)  
       EV: s was told that Juan stole the cow  
   b. B: ari pay=mi ka-rqa-n ichaqa ni pi=pas willa-ru-sunki qan kiki=yki  
       yes he=BPG be-PST-3 but no who=ADD tell-HORT-3S2O you self=2  
       riku-ra=nki riki  
       see-PST=2 right  
       ‘Yes, it was him. But nobody told you this. You saw it yourself, didn’t you.’

2.3 Speaker-orientation

Conventional implicatures are, according to Potts, necessarily speaker-oriented,
\(^9\) while presuppositions are not. We can test this by checking whether the meaning of a conventional implicature or presuppositional element embedded under a propositional attitude can be denied by the speaker. If it can be denied, then it follows that the element in question is not (necessarily) speaker-oriented. As shown in (18), this is not possible for the expressive conventional implicature of **jerk**, but it is possible for the presupposition triggered by **stop**.

(18)  
   a. Sue wrongly believes that that **jerk** Conner got promoted. #In fact, he isn’t a jerk.

\(^9\)This claim has been argued to be false – see, for example, Amaral et al. (2007) – and in later work, for example Potts (2007b), Potts has revised this, allowing for perspective shifts to salient attitude holders/judges in the context.
b. Sue wrongly believes that Conner stopped smoking. However, he never smoked in the first place.

This test applied to illocutionary modifiers, as in (19), shows that they, like conventional implicatures, are speaker-oriented.

(19) Sue believes that Conner, alas, was made redundant. #But I’m happy that he was made redundant.

However, this test only shows speaker-orientation for illocutionary modifiers in assertions. Some illocutionary modifiers, for example honestly in (20), change their orientation to the addressee in questions (this has become known as interrogative flip (Tenny and Speas 2003)), and so are then not speaker-oriented. The restriction for such illocutionary modifiers is therefore better described as orientation towards a speech act participant. This still distinguishes them from presuppositions, which can be oriented towards the subject of an attitudinal verb, which is the main contrast we are interested in here.

(20) Honestly, who asked who out? (Internet (Faller 2002:237))

Note that not all illocutionary modifiers participate in the interrogative flip. For example, alas remains anchored to the speaker in (21).

(21) Is it, alas, raining?

Thus, illocutionary modifiers pattern again with conventional implicatures for this property, although for some, speaker-orientation has to broadened to speech act participant orientation.

Applying this test to the Cuzco Quechua reportative is not straightforward, as it cannot, in general, embed. For example, it cannot occur in the antecedent of conditionals or in the complements of perception verbs (Faller 2002). However, the reportative can occur in the complement of the verb niy ‘say’, if this complement is a fully finite clause, and so we can apply the test with this verb. Consider the naturally occurring examples in (22).

(22) a. chhaynata=taq ni-mu-n-ku kay wiraqocha Carlos Ferrero, kay then=CONTR say-CISL-3-PL this gentleman Carlos Ferrero this wiraqocha-wan=sis rima-yu-nqà-ku kunan p’unchaw gentleman-COM=REP speak-AUG-3.FUT-PL now day

‘Then they say (that) this gentleman Carlos Ferrero, with this gentleman, reportedly, they will talk today.’ (Radio)

10Moreover it seems to introduce a bias, such that the speaker expects the answer to be positive (cf. Rett (2013)). This seems to be due to the fact that in order for a speaker to lament p they have to believe p.

11The reportative is not possible within the complement of niy if it is a nominalized clause (Faller 2002:222). Note that it is not entirely clear whether the examples in (22) constitute true embedding. According to Lefebvre and Muysken (1988:12), non-nominalized complement clauses contain the complementizer chay ‘that’, which is however not present in (22a,b). It is therefore possible that these contain two independent clauses.
b. chay faena-pi  ni-ra-n  Inka Qosqo-ta  hatari-chi-sha-qtí-n=si
   this faena-LOC say-PST-3 Inka Cusco-ACC raise-CAUS-PROG-NMLZ-3=REP
   machula-nchis-kuna  tiya-q hina=s  lliw=si  panpa
   ancestor-1PL.INCL-PL sit-AG like=REP all=REP plain

   ‘At this faena he said that when the Inka built Cusco, where our ancestors lived, everything was plains, like this.’

   (Valderrama Fernandez and Escalante Gutierrez 1982:19)

In both examples, and all the other examples I have been able to find, the reportative seems to be interpreted only in concord with the verb of saying, that is, they jointly convey the meaning that someone else related the information in the complement clause. While it is of course possible that the subject of niy ‘say’ in turn also heard this from other people, this is, according to the speaker I have consulted, not necessarily so.12 This would suggest that the reportative is speaker-oriented in assertions.

The reportative can participate in interrogative flip, that is, in questions, it can be interpreted with respect to the addressee. An example is given in (23).

(23) Context: A son announces to his father that a young man has come to see him. The father sends him to let him in and asks:

   may-manta=s  chay runa ka-n-man
   where-ABL=REP this man be-3-COND

   ‘Where could this man be from?’

   (Itier 1995:290)

That is, as with illocutionary modifiers, it is better to describe this property for the Cuzco Quechua reportative as orientation towards a speech act participant.

In addition to the flip reading in questions, the Cuzco Quechua reportative has a reading in which it is still speaker oriented, as shown in (24).

(24) Context: Martina asks the mother-in-law of her consultant how she is. The mother-in-law doesn’t hear her, so the consultant asks her the following:

   imayna=s  ka-sha-nki
   how=REP be-PROG-2

   ‘(She says) How are you?’

   (Conversation, reconstructed from memory)

Under this reading, the question is asked by the speaker on someone else’s behalf. The question as a whole is reported. Faller (2002) takes this as strong support for the illocutionary analysis of the Cuzco Quechua reportative, as it has scope here over the entire question speech act.

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12I have only checked this with one speaker so far, and only by talking about it with them at a meta level, by asking them whether the unspecified subject of niy could have first hand knowledge of p. This claim therefore requires further support from a proper investigation with more than one speaker.
2.4 (Anti-)Backgrounding

Presuppositions are propositions that under normal circumstances are taken by the speaker to be part of the common ground. As such, they convey old, backgrounded information. For example, the verb *know* presupposes its complement. In (25), the complement conveys the old information that Lance Armstrong is a cancer survivor; the new information is the claim that most riders know this.

(25) Most riders know that Lance Armstrong is a cancer survivor.

In contrast, conventional implicatures tend to introduce new information, albeit in a de-emphasized manner (Potts 2005:33). Thus, in (26), the information that Ames stole from the FBI would normally be new information.

(26) Ames, who stole from the FBI, is now behind bars.

According to Potts (2005:33), conventional implicatures are not only not backgrounded, but have a stronger requirement: anti-backgrounding. That is, conventional implicatures are infelicitous in contexts in which their content is already known. The second sentence of (27a) is infelicitous in the context of the first, which asserts the content of the nominal appositive. The parallel discourse in (27b) with a presupposition is perfectly fine.

(27) a. Ames stole from the FBI. #When Ames, who stole from the FBI, was finally caught, he was put behind bars.

b. Ames stole from the FBI. When they realized that he stole from the FBI, they put him behind bars.

Illocutionary modifiers vary with regard to backgrounding. Illocutionary modifiers expressing preparatory conditions are presuppositional and therefore backgrounded. For example, in making a request, the speaker takes for granted that the addressee has the ability to perform the ordered action; in making a promise or concession the speaker assumes that the addressee wants the promised/conceded thing to happen. The adverbial phrases in (28, in italics) express these preparatory conditions overtly.

(28) a. *Since you are so good at this*, let’s try it one more time with our eyes closed. (google.co.uk)

b. Ok then, I’ll make it an editable *since you want it so much*. (google.co.uk)

As shown in (29), the sentences in (28) are felicitous in a context in which the content of the illocutionary adverbials has been previously asserted.

(29) a. You are really good at this. So, *since you are so good at this* . . .

b. You really want it to be editable, don’t you? Ok then, *since you want it so much*, I’ll make it an editable.

However, other illocutionary modifiers do not require backgrounding nor anti-backgrounding. For example, *alas* in (30a) conveys new information, but it is also felicitous in a context in which its meaning has already been established (30b).
(30) a. Alas, it is raining.
b. It’s very lamentable, but, alas, it is raining.

The Cuzco Quechua reportative also requires neither backgrounding nor anti-backgrounding. For example, the question posed in (31a) does not anticipate that the answer might be based on reportative evidence. It is possible that one of the addresses could have seen a train for themselves when visiting a region that already had trains or that an addressee would make a conjecture. Thus, the reportative in (31b) and (31c) conveys new information.

(31) Context: the speaker describes the reactions of people when the train first came to their region.
   a. tren tren imayna=chá
      train train how=CONJ
      ‘The train, the train, how might it be?’
   b. kuru hina=s suchu-n
      bug like=REP crawl-3
      ‘It crawls like a bug (they say).’
   c. yana animal=si
      black animal=REP
      ‘It’s a black animal.’

(Valderrama Fernandez and Escalante Gutierrez 1982:30)

However, the reportative is also felicitous in contexts in which it is already established that the current statement is based on reportative evidence. Thus, in (32), the first sentence asserts that the speaker was told something, namely what follows. The reportative is then still used in the recounting of the news story.

(32) chaymanta-pas willay-man-chis […] qaynuchay p’unchay-taq=sis huk wayna
    then-ADD tell-1O-PL yesterday day-CONTR=REP one young.man
    arma-ntin=sis ka-n-man ka-ra-n hinaspa wañu-ra-chi-pu-sqa
    weapon-INCL=REP be-3-COND be-3-PST then die-CAUS-BEN-NX.PST
    enamorada-n-ta.
    girl.friend-3-ACC
    ‘We are also told (the following). Yesterday there was a young man with a weapon,
    he then killed his girlfriend.’

(Radio news)

Illocutionary modifiers and the Cuzco Quechua reportative are therefore distinct from both presuppositions and conventional implicatures with respect to (anti-)backgrounding.

2.5 Projection from holes

Because a presupposed proposition is already assumed to be true, it cannot ‘simultaneously be presented as denied, or hypothesized or queried’ (Chierchia and McConnell-Ginet 2000:352). This explains why they project from holes like negation, questions, and the antecedents of if-clauses (Karttunen 1973). The so-called family of sentences test which
involves these constructions is applied to the presupposition trigger stop in (33). Like the simple assertion in (33a), its negation, corresponding question, and conditional with the trigger in the antecedent in (33b–d) all still presuppose (33e).

(33)  
  a. Conner stopped smoking.
  b. Conner didn’t stop smoking.
  c. Did Conner stop smoking?
  d. If Conner stopped smoking, Sue will stop, too.
  e. Conner used to smoke.

As shown in (34), conventional implicatures also project in the same way. That is, each of (34a–d) presupposes (34e).

(34)  
  a. Ames, who stole from the FBI, is now behind bars.
  b. Ames, who stole from the FBI, is now not behind bars.
  c. Is Ames, who stole from the FBI, now behind bars?
  d. If Ames, who stole from the FBI, is now behind bars, we can all relax.
  e. Ames stole from the FBI.

Applying the family of sentences test to illocutionary modifiers yields results that are somewhat difficult to interpret, though especially the interaction with negation shows that they do not project in the expected way. (35) replicates the family of sentences test for alas.

(35)  
  a. Alas, it is raining.
  b. It is not, alas, raining. / Alas, it is not raining.
  c. Is it, alas, raining?
  d. If it is, alas, raining, we won’t go for a hike.
  e. Speaker laments that it is raining.

Alas in (35b) has wide scope over negation. What is lamented is the fact that it is not raining. However, this is not projection. If it were, the meaning conveyed by alas should still be (35e), that the speaker laments the fact that it is raining. With polar questions and conditional antecedents, alas seems to add a biased assumption that it is raining, and it is this assumption that is lamented. That is, (35c,d), arguably still convey (35e), though this does not seem to be projection in the usual sense, as whether or not the speaker laments p depends on whether the truth of p is confirmed.

Turning now to the Cuzco Quechua reportative, =si does not project in the expected way either. Like alas, it scopes over negation, rather than projecting from under it. That is, as shown in (36b), negating a sentence with the reportative results in the interpretation that the speaker was told not p, not, as expected if it did project, that they were told p.

(36)  
  a. phalay-ta=s  ati-n 
      fly-ACC=REP can-3
      ‘It can fly.’
      EV = speaker has reportative evidence that it can fly
b. mana= s phalay-ta ati-n=chu
    not=REP fly-ACC can-3=NEG

‘It can not fly.’

\( \text{EV} = (\text{i}) \) speaker has reportative evidence that it cannot fly
\( \text{ev} = (\text{ii}) \# \text{speaker has reportative evidence that it can fly} \)

In questions, \( =si \) can give rise to two readings (as already discussed in section 2.3). In the first, it is anchored to the addressee in questions, resulting in the meaning that the speaker assumes that the addressee knows the answer based on reportative evidence. This is shown in (37), repeated from (23).

(37) a. Context: A son announces to his father that a young man has come to see him. The father sends him to let him in and asks:

b. may-manta= s chay runa ka-n-man
    where-ABL=REP this man be-3-COND

‘Where could this man be from?’ (Itier 1995:290)

In the second, illustrated in (38), repeated from (24), \( =si \) conveys that the speaker asks the question on behalf of someone else.

(38) imayna= s ka-sha-nki
    how=REP be-PROG-2

‘(She says) How are you?’ (Conversation, reconstructed from memory)

Neither reading constitutes a projection of the meaning of \( =si \) in questions, as that would mean that the speaker should be committed to having reportative evidence for \( p \). We cannot test projection from conditional antecedents, as \( =si \) cannot be embedded.

Again, illocutionary modifiers and the Cuzco Quechua reportative differ from both presuppositions and conventional implicatures with respect to projection from holes.

### 2.6 Projection from plugs

While conventional implicatures behave like presuppositions with respect to holes, they differ with respect to plugs. Plugs are constructions that prevent presuppositions from projecting (Karttunen 1973), such as propositional attitudes. Presuppositions do not project from plugs, whereas conventional implicatures do. We already saw this in examples (18), repeated here as (39).

(39) a. Sue wrongly believes that that jerk Conner got promoted. \#In fact, he isn’t a jerk.

b. Sue wrongly believes that Conner stopped smoking. However, he never smoked in the first place.

If conventional implicatures were plugged by propositional attitudes, we would expect it to be possible for the speaker to distance themselves from the conventional implicature, but as (39a) shows, this is not the case. In contrast, the presupposition that Conner used to smoke
is in (39b) attributable to Sue, the subject of believe, allowing the speaker to express their non-commitment to it. The presupposition is therefore not inherited by the entire sentence.

Presuppositions moreover evaporate from conditionals with a presupposition trigger in the consequent, if their presupposition is entailed by the antecedent (Karttunen 1973:177), as shown in (40a). This is not the case for conventional implicatures, which cannot be bound in this way, resulting in overall oddness, (40b).

(40) a. If Ali has a brother, then Ali’s brother is a spy.

b. ??If Ames stole from the FBI, then Ames, who stole from the FBI, is now behind bars.

Turning to illocutionary modifiers, alas is not plugged by propositional attitudes, as the speaker cannot distance themselves from the meaning of alas even when it is embedded under a propositional attitude, cf. (41), repeated from (19).

(41) Sue believes that Conner, alas, was made redundant. #But I’m happy that he was made redundant.

And like conventional implicatures, the meaning of alas cannot be plugged in conditional consequents by making its meaning the antecedent proposition, (42).

(42) ??If I lament that Conner was made redundant, then he was, alas, made redundant.

The reportative implication of =si is not plugged by verbs of saying either, (43), repeated from (22a), and does also not evaporate from conditional consequents if it is hypothetically assumed in the antecedent, (44).

(43) chhaynata=taq ni-mu-n-ku kay wiraqocha Carlos Ferrero kay then=CONTR say-CISL-3-PL this gentleman Carlos Ferrero this wiraqocha-wan=sis rima-yu-nqa-ku kunan p’unchaw gentleman-COM=REP speak-AUG-3.FUT-PL now day

‘Then they say (that) this gentleman Carlos Ferrero, with this gentleman, reportedly, they will talk today.’ (Radio)

(44) sichus ni-wa-rqa-n Juan hamu-na-n-ta chay=qa Juan=qa if say-1O-PST-3 Juan come-NMLZ-3-ACC then=TOP Juan=TOP hamu-nqa=s. come-3.FUT=REP

‘If I was told that Juan will come, then Juan will come.’ ev: s was told that Juan will come (Faller (2002:118), elicited)

Thus, illocutionary modifiers and the Cuzco Quechua reportative pattern with conventional implicatures with respect to plugs and contrast with presuppositions.
2.7 Summary

Table 1 summarises the results of the tests for each of the types of meaning looked at in this section.

The first main observation here is that the Cuzco Quechua reportative \(=si\) patterns mostly with illocutionary modifiers (IM) like \(\textit{alas}\), and that both of these are clearly distinct from both at-issue content and presuppositions (P). \(\textit{Alas}\) and \(=si\) differ from each other in two respects: first, in questions, \(\textit{alas}\) seems to be still conveying that the speaker laments \(p\), which is assumed to be true, but the meaning of \(=si\) is either that the speaker asks the question on someone else’s behalf or that the addressee is expected to know the answer based on reportative evidence. The latter, interrogative flip reading, can, however, be observed with other illocutionary modifiers, so this suggests that \(\textit{alas}\) is subject to additional restrictions in questions. The first reading, which involves \(=si\) taking the entire question act in its scope, is, however, not observed with any illocutionary modifier, as far as I know. Second, the two types of element differ in whether or not they are necessarily taken for granted. Certain, but not all illocutionary modifiers, have this requirement – namely those illocutionary modifiers that specify preparatory felicity conditions – but the reportative does not.

Illocutionary modifiers and the Cuzco Quechua reportative pattern with conventional implicatures (CI) in a good number of properties, but there are also significant differences, which suggest that they should not be analyzed as conventional implicatures. In particular, conventional implicatures escape from holes, whereas illocutionary modifiers and the reportative do not, and conventional implicatures, but not illocutionary modifiers and the reportative, require anti-backgrounding. Thus, I suggest the addition of a further type of entailed not-at-issue meaning to taxonomies of meaning types, namely that of illocutionary entailments.

3 Conventional implicature analyses of reportatives

In the previous section, it was shown that the Quechua reportative and other illocutionary modifiers are empirically distinct from conventional implicatures. In this section, I will argue
that existing analyses of the reportative as a conventional implicature are inadequate also on theoretical grounds. Potts (2005) develops a typed logic that deals with at-issue content and conventional implicatures as two different meaning dimensions. The two dimensions are truth-conditionally independent of each other, except for the fact that conventional implicatures take elements from the at-issue dimension as their arguments. The dimensions can be represented as a tuple of meanings such as (45).  

\[ (45) \quad <p, \text{CI}(p)> \]

Potts (2007b:195) suggests that a conventional implicature analysis of evidentials, in particular one that classes them with expressives, might be fruitful to explore. Such an analysis of the Cuzco Quechua reportative would result in the tuple in (46).

\[ (46) \quad <p, \text{Rep}(p)> \]

However, Potts himself is aware that this analysis would not be appropriate for evidentials like the Cuzco Quechua reportative, as he asks: ‘But to what extent do they manifest the independence property? It is generally hard to determine whether a sentence containing a hedging evidential counts as an assertion of its core propositional content. This judgment can vary from language to language, even from morpheme to morpheme; see Faller (2002) and Garrett (2001) for descriptions that are well attuned to the difficulty of this issue.’

The problem identified here by Potts is illustrated by (47).

\[ (47) \]

a. pay-kuna=s ñoqa-man=qa qułqi-ta nuntu-nitn-pi saqiy-wa-n
   she-PL=REP I-IIL/A=TOP money-ACC lot-DECL-LOC leave-1o-3
   \[ p_1= \text{‘They leave me a lot of money.’} \]
   \[ \text{EV}_1: s \text{ has reportative evidence for } p_1 \]

b. mana=ma riki riku-sqa-yki ni un sol-ta centavo-ta=pis
   not=IMPR right see-PP-2 not one Sol-ACC cent-ACC=ADD
   saqiy-sha-wa-n=chu
   leave-3o-1=NEG
   \[ p_2= \text{‘(But) that’s not true, as you have seen, they don’t leave me one sol, not one cent.’} \]
   \[ \text{EV}_2=s \text{ has direct evidence for } p_2 \quad \text{(Conversation)} \]

The speaker of (47) first introduces the proposition that they have left her money into the discourse under the scope of the reportative and then goes on to deny the truth of this proposition. It is therefore clear that the speaker is not committed to the truth of the proposition in (47a), and indeed is committed to its falsity. As speaker commitment to \( p \) is a sincerity condition for an assertion of \( p \), it follows that \( p \) in (47a) is not asserted. Potts assumes that the at-issue content of declarative sentences is asserted. (46) is therefore not an adequate analysis of the Cuzco Quechua reportative.

Note that Potts takes this to be a violation of the requirement for independence of truth values for conventional implicatures. However, if we take the possibility of assenting to \( p \)
while dissenting with a not-at-issue expression as a test for truth-conditional independence, then, as shown in section 2.2, the evidential contribution of the Cuzco Quechua reportative is truth-conditionally independent of $p$. Unlike with presuppositions, the truth of $p$ is not in any way dependent on the truth of the evidential contribution. Without the continuation in (47b), it is also conceivable that the proposition that they gave her money in (47a) is true while at the same time it might be false that the speaker was told about it. What is at-issue here is not truth-conditional independence but rather whether the speaker presents $p$ as true. That is, the evidential affects the assertability of $p$ by the speaker, not the truth of $p$.

Another expression Potts excludes from the set of conventional implicatures based on this criterion is the parenthetical *it seems*, because, despite it being intonationally isolated and syntactically similar to as-parentheticals, *it seems* cannot be removed from (48) and leave ‘the at-issue core unaffected’ (Potts 2005:92).

(48) Max, it seems, is a Martian.

Again, a better characterization of what is affected by *it seems* is not the at-issue core itself, but rather whether or not this core is asserted. The conventional implicature analysis is not adequate for the Cuzco Quechua reportative or for *it seems*, because it does not allow any reference to the illocutionary level of meaning, not because the truth of the at-issue content is dependent on the truth of the evidential.

That the basic analysis of evidentials as conventional implicatures in (46) does not work for all evidentials because it assumes that the at-issue content is asserted has also been observed by Portner (2006), and similar considerations have led Zimmermann (2004) to reject the conventional implicature analysis for the German speech act level epistemic modal *wohl*. Being aware of this fundamental problem, McCready (2010) proposes a conventional implicature analysis for the CQ evidentials based on his extension to Potts’ logic which introduces a new logical type, namely that of a shunting type. Shunting types are needed for sentences which contribute only conventional implicature content but have no at-issue content. An example from English is single-word utterances of expressives such as *man* in (49b).

(49) a. A: What’s the weather like outside?
   b. B: Man!

McCready (2010) assumes that *man* here applies to a contextually supplied proposition and expresses a strong feeling towards this proposition. However, this proposition is not asserted. Shunting types are ‘types for those semantic objects [such as *man*] that ‘shunt’ information from one dimension to another, without leaving anything behind for further modification’ (McCready 2010:18). He stipulates ‘that in cases where a sentence lacks asserted content it is still interpreted as a 2-tuple, but one with a first (left) element which is always satisfiable. I will denote this trivial assertion by T’ (McCready 2010:32). Thus, (49b) can be represented as in (50).

(50) $<T, man(p)>$
Shunting types are not only useful for sentences consisting of only a conventional implicature element, but also for elements that take a proposition as their scope, but rather than leaving this proposition in the at-issue dimension, they take it with them into the conventional implicature dimension. The Japanese adverbial *yokumo*, (51), is a case in point.

(51) Yokumo Dallas to kekon sita na
    YOKUMO Dallas with marry did PT

‘He did an amazingly stupid and shocking thing by marrying Dallas.’

*Yokumo* expresses the speaker’s negative feelings towards the propositional content and that it is unexpected. Most importantly, \( p = ‘He married Dallas’ \), in (51), is not at-issue, which is evidenced by the fact that it cannot provide new information and that it cannot be directly denied. Thus, (51) cannot serve as the answer to the question *Who did Austin marry?* (McCready 2010:39), and direct denials such a *That’s not true* or *That’s a lie!* are infelicitous as responses. Thus, in McCready’s terminology, *yokumo* shunts the at-issue content into the conventional implicature dimension, and consequently, the conventional implicature content is the only content conveyed by *yokumo* sentences, that is, the resulting meaning is (52).

(52) \(<T, \text{ bad}(p) \land \text{ surprise}(p)\>\)

McCready (2010:48f) suggests that the Cuzco Quechua reportative can be analyzed along the same lines, and proposes (53) as its semantics.

(53) \(<T, \text{ Hearsay}(p)\>\)

This analysis correctly accounts for the fact that \( p \) in the scope of the reportative is not asserted. However, it wrongly predicts that it should not be possible to target \( p \) with denials or for \( p \) to serve as the answer to a question. Neither of these predictions is borne out. Denials of utterances with the reportative are felicitous and only target \( p \), as shown in (54).

(54) a. mana=s phalay-ta ati-n=chu
    not=REP fly-ACC can-3=NEG

    \( p = ‘It cannot fly . . . ’ \)
    EV: s was told that \( p \)  
    (Conversation)

b. mana=n chiqaq=chu phalay-ta=puni=n ati-n
    not=BPG true=NEG fly-ACC=CERT=BPG can-3

    ‘That’s not true. It can definitely fly.  
    (Constructed)

And (55) shows that reportative utterances can serve to answer questions.

(55) a. hasta illarimuy=kama
    until dawn=LIM

    ‘Until dawn?’

\(^{14}\text{*Yokumo* also presupposes that } p \text{ has to be believed by the speaker to be in the common ground. This, incidentally, shows that there are also elements that convey both presuppositional and conventional implicature content.}\)
Recall also that, according to Potts (2005), at-issue content carries the main theme of the discourse or controversial propositions. In Cuzco Quechua, stories are told with the reportative present in almost every sentence, be they traditional folk tales or stories from everyday life for which the speaker only has second-hand evidence – see for example the short excerpt from a news story in (32).

We therefore must allow for the propositions conveyed with the reportative to act as at-issue content, without, however, requiring that this content be asserted. That is, we must not identify at-issueness with assertion. Any analysis that achieves this would have to allow the Cuzco Quechua reportative to have an effect on illocutionary force. The basic idea of Faller (2002) is that utterances with the Cuzco Quechua reportative do not assert $p$, but present or put forward $p$, that is, $p$ is introduced into the discourse without the speaker committing to the truth of it. The speech act performed by (1a) would have the following components (where I have here chosen put for ‘putting forward’ to name this speech act):

(56) a. u: para-mu-sha-n=$si$.
   
   b. $p = \text{It is raining}$
   
   c. put$_n$(it is raining)
   
   d. sinc: someone else said that $p$

To maintain compositionality, some modifications to traditional speech act theory are required. In particular, Faller (2012) suggests that declarative sentences are associated with put rather than assert, and that the sincerity condition for assertions that the speaker believes $p$ is only added to put by default when there is no illocutionary modifier (such as the Cuzco Quechua reportative) that overrides this default. I will not go into the details of this analysis, as the point for the current paper is to show that the resulting speech act in (56) correctly captures that the at-issue content introduced under the reportative is at-issue but not asserted.

4 Conclusion

The main aim of this paper has been to show through a detailed comparison of the empirical properties of the Cuzco Quechua reportative evidential with those of typical presupposition and conventional implicature triggers that it cannot be subsumed under either of these categories. It was also shown that previous proposals of analyzing this evidential as a conventional implicature fail to capture that the proposition it introduces into the discourse is at-issue, yet not asserted. The Cuzco Quechua reportative behaves in most respects like elements that are widely assumed to operate on the illocutionary level such as the adverbs alas and honestly. An analysis of it as an illocutionary modifier (as first proposed in Faller (2002)) therefore still seems the most appropriate for this marker.
Potts (2005) develops an upper-layer logic to account for utterance modifiers such as *frankly*. The lower-level logic dealing with at-issue content and supplements and expressives is embedded within this. This architecture is therefore not unlike the hierarchical structure $F(p)$ of traditional speech act theory. It is conceivable that this upper-layer logic can be extended to account for elements like the Cuzco Quechua reportative =*si*. Doing so would however not alter the fact that it is an illocutionary modifier. In our taxonomies of conventional meaning types, we should therefore include a category of illocutionary entailments, as opposed to at-issue entailments on the one hand, and to the other types of not-at-issue entailments, presuppositions and conventional implicatures, on the other.

The Cuzco Quechua reportative differs from *alas* and *honestly* in two respects: (i) utterances containing it are not assertions but a weaker form of putting forth a proposition into the discourse which does not require the speaker to be committed to its truth; (ii) it seems to be able to take an entire question speech act in its scope, resulting in an interpretation that a question is asked on someone else’s behalf. Regarding (ii), only an illocutionary analysis of this evidential would be able to account for this observation, thus providing a further argument against the conventional implicature analysis. A fully compositional analysis of this reading as well as the flip reading in questions is still outstanding.

The analysis proposed in Faller (2002) and Faller (2012) captures (i), but it leaves open the question of how the at-issue content is dealt with in subsequent discourse, that is, whether and how it affects the common ground. If the speaker does not express their commitment to $p$, then what is the point of presenting $p$ at all? Clearly, the speaker still intends to convey some information. This is especially clear when questions are answered with reportative utterances or in news reporting contexts. We therefore need to develop an analysis that separates speaker commitment to $p$ from the ability of $p$ to advance the discourse in an informative way. Murray (2010, 2014) has studied how Cheyenne evidentials update the common ground and so her analysis might be applicable to the Cuzco Quechua reportative as well. (Faller 2007) also provides some discussion of these issues within the framework of SDRT (Asher and Lascarides 2003), and it would be worthwhile to explore this further. Most promising for capturing the above observations, however, seems to me the recent dynamic theory for speech acts developed by Farkas and Bruce (2010), as it allows the separation of commitments, what is under discussion and what enters the common ground. In particular their notion of a Table, which is a stack of propositions currently under discussion/at-issue, would allow us to capture the idea that propositions under the Cuzco Quechua reportative are introduced into the discourse for further discussion, that is, put on the table. The individual discourse participants’ commitments are tracked in separate stacks, and are also distinct from the common ground, the set of propositions that all discourse participants are publicly committed to. So, the speaker’s commitment can be kept distinct from the common ground as well as from the contribution the at-issue content makes to the discourse. Before such an analysis can be developed, however, the empirical facts about how the at-issue content is treated in subsequent discourse remain to be established.
References


1 Introduction

Asturian, a Western Iberian Romance language that remains underrepresented in syntactic descriptions both traditional and current, exhibits similar enclisis/proclisis alternations as those found in Galician and European Portuguese in the matrix environment. Consider the example in (1), which is only grammatical when enclisis arises, which contrasts with that in (2), which may only exhibit proclisis.

(1) Téoles tayaes [*Les teo]
    have1SG-themCL cut
    ‘I have them (my hands) cut.’  

(2) Nun me mancó [*mancóme]
    not meCL hurt3SG
    ‘S/he didn’t hurt me.’  

Microparametric differences arise the moment we turn our attention to the finite embedded context. Asturian, but neither Galician nor European Portuguese, may either exhibit optional enclisis in a subordinate context as that in (3), or obligatory enclisis in a finite embedded environment as that illustrated in (4).

(3) a. Digo [qu’ayúdame]
    say1SG that-help3SG-IND- meCL
   b. Digo [que me ayuda]
    say1SG that meCL help3SG-IND
    ‘I say that s/he helps me out.’  

1 I would like to thank Adolfo Ausín, Héctor Campos and Elena Herburger for their continuous help and support, Xulio Viejo and Ramón d’Andrés for their time and help with data and judgments in Asturian, and the audiences at the 20th Colloquium on Generative Grammar (Spain, 2010), at the Challenging Clitics Workshop (Oslo, 2011) and at the 40th Annual Meeting of the Berkeley Linguistics Society (California, 2014) for comments and suggestions. Needless to say, I am solely responsible for the use I made of their comments.

2 The clitic is bold-faced in this and subsequent examples for the reader’s convenience. The abbreviations used in the glosses are the following: CL (Clitic), IND (Indicative mood), INF (Infinitival), PL (Plural), RFL (Reflexive), SG (Singular), 1/2/3 (First, second and third person respectively).
The availability of an enclitic pattern in these environments, unexpected under a phonological analysis to clitic placement alternations as those discussed, is accounted for assuming that enclisis arises independently of phonological factors. Extending the analysis proposed in Fernández-Rubiera (2014), I argue that enclisis arises as a result of Fin(iteness)º (Rizzi 1997 and subsequent) being a phase-head (Chomsky 2008 and subsequent) triggering last-resort verb-movement in the absence of A’-movement or a closer head to Finº than Tº. As I will show, this analysis not only accounts for enclisis/proclisis alternations in the matrix and subordinate environments in Asturian, but it also explains naturally the correlation between these clitic placement alternations and the interpretation they give rise to in the subordinate environment.

This paper is organized as follows. I first introduce some basic data showing the different contexts that trigger enclisis and proclisis in the matrix environment in Asturian in section 2. In section 3, I discuss how phonological approaches to clitic placement alternations as those in Asturian have been accounted for, ultimately showing how they fall short at explaining the enclisis we find in (3a) and (4). I lay out my main assumptions and my analysis in section 4, and I show how the analysis I propose accounts for enclisis/proclisis alternations in matrix environments in section 5, and in section 6 I extend the analysis to account for the observed clitic patterns we find in Asturian in finite embedded contexts as those in (3) and (4). Further predictions and evidence for the analysis I propose are discussed in section 7, related to the interpretation that these different clitic patterns correlate with in the finite embedded context, and section 8 concludes this paper with further questions.

2 The Data: Enclisis and Proclisis Alternations in Matrix Environments in Asturian

2.1 Enclitic Patterns in the Matrix Environment in Asturian

Similarly to what we find in Galician and European Portuguese, enclisis arises in Asturian in verb-initial contexts, with preverbal non-quantified subjects, and after Clitic Left-Dislocated Topics. These different environments are illustrated in the examples below, and the source of the examples is given in brackets.

(5) Téoles tayaes [*Les teo]

have1SG-themCL cut
‘I have them (my hands) cut.’ [Álvarez, Llames]
The environments where proclisis arises in the matrix environment in Asturian are shown next.

### 2.2 Proclitic Patterns in the Matrix Environment in Asturian

A proclitic pattern shows up in Asturian with the negative marker, and with preverbal *wh*- and Focus constituents, as illustrated in the following examples. These contexts also trigger proclisis in Galician and European Portuguese.

(8) Nun **me** mancó
not **me** hurt3SG
‘S/he didn’t hurt me.’

(9) Cómo t’atreves?
how **rflCL-dare2SG**
‘How dare you?’

(10) YO MESMA **me la** repito un cientu vegaes
I **rflCL-itCL repeat1SG** one hundred times
‘I myself repeat it to myself one hundred times.’

### 2.3 Enclisis and Proclisis in the Matrix Environment in Asturian: A Summary

Summarizing, and similarly to what we find in the other Western Iberian Romance languages (e.g., Galician and European Portuguese), enclisis arises in the matrix environment in Asturian in verb initial contexts, with preverbal non-quantified subjects and after Clitic Left-Dislocated Topics. Proclisis, on the other hand, shows up in the matrix environment with the negative marker, and with preverbal *wh*- and Focus constituents.

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3 As it is customary, capitals are used to indicate the rising (Focus) intonation of the fragment *yo mesma*, “I myself.”
In what follows, I will show how phonological approaches to clitic placement alternations as those illustrated above fall short at explaining the availability of enclisis in the finite embedded context in Asturian.

3 Phonological Accounts of Enclisis/Proclisis Alternations

3.1 Accounting for Enclisis and Proclisis in the Matrix Environment

Rivero (1986), Campos (1989), and Barbosa (1995, 2000) argue that clitics in Old Spanish, Galician, and European Portuguese respectively are sensitive to phonological filters as those in (11) and (12).

(11) *[CP Φ clitic[ENCLITIC]], where Φ = another clitic or a null element [Rivero (1986)]

(12) *[IntP cl(itic) V… ], where IntP = Intonational Phrase [Barbosa (1995, 2000)]

For Rivero (1986), the filter in (11) triggers last-resort Tº-to-Cº movement. Thus, an example as that in (5), repeated in (13) below, is derived as in (14). Rivero assumes that the clitic raises to TP past the verbal head (cf. (14a)), operation after which the clitic appears as the first element in the structure (cf. (14b)), Tº-to-Cº is triggered as a repair, as in (14c), and the enclisis we find in this example is accounted for.

(13) Téoles tayaes [*Les teo]
     have1SG-themCL cut
     ‘I have them (my hands) cut.’ [Álvarez, Llames]

(14) a. [CP [Cº [TP les[ENCLITIC] [Tº teo … les tayaes ]]]]
     b. *[CP les[ENCLITIC]] – ruled out by (11)
     c. [CP [Cº teo [TP les[ENCLITIC] [Tº teo … tayaes ]]]] – last resort Tº-to-Cº as a repair

Differently from Rivero’s analysis of enclisis, Barbosa (1995, 2000) does not argue that Tº-to-Cº movement is the last-resort operation triggered by the phonological filter in (12). Rather, she contends that this filter instructs and forces the derivation to pronounce a lower copy of the clitic. For illustration, consider (6), repeated in (15), which Barbosa derives as in (16).

(15) El xenru matóse nun accidente na mina [*Se mató]
     the son-in-law killed3SG-rflCL in-an accident in-the mine
     ‘His son-in-law got killed in an accident in the mine.’ [González, Comedies]
As illustrated in the derivation in (16), Barbosa claims that the clitic raises from a lower position and adjoins to the verb as in (16a). Once the structure is mapped onto Intonational Phrases (IntPs), the clitic ends up being the first element in an Intonational phrase, an illicit structure given the filter in (12), and the derivation is therefore instructed to pronounce a lower copy of the clitic as a repair, as in (16c), which accounts for the enclisis observed in this instance.

However, contrary to fact, these analyses predict that only a proclitic pattern be found in the finite subordinate environment, a point to which I turn next.

### 3.2 A wrong phonological prediction: Enclisis in finite embedded contexts in Asturian

The phonological filters that Rivero, Campos, and Barbosa propose to account for enclisis in matrix environments as those in (11) and (12) predict that this clitic pattern should be unattested in the finite embedded context. Consider now the examples in (17) and (18),

(17) a. Digo [qu’ayúdame]
    say1SG that-help3SG-IND- meCL
b. Digo [que me ayuda]
    say1SG that meCL help3SG-IND
   ‘I say that s/he helps me out.’ [From Viejo (2008)]

(18) Yera tan pija [que llamábenla Bambi] [*la llamaben]
    was3SG so preppy/posh that called3PL-IND-herCL Bambi
   ‘She was so preppy/posh that they used to call her Bambi.’ [From TV Series “El Chigre”]

Given that the complementizer *que* “that” in the sentences above instantiates Cº – for Rivero and Campos – and it would presumably be the first element of the Intonational Phrase that includes the clitic – for Barbosa, the filters proposed (11) and (12) should be rendered inert and only proclisis as in (17b) should be attested, contrary to fact. Further, the fact that only enclisis is grammatical in (18) remains unexplained.

In the next section, I lay out my assumptions and the analysis I propose to account for enclisis and proclisis alternations in Asturian both in the matrix and in the subordinate environment.
4 Main assumptions and analysis

The analysis I developed in Fernández-Rubiera (2014) relies on three main assumptions: The Topic nature of preverbal non-quantified subjects in Asturian, the status of clitics as agreement Xº morphemes in this language, and Rizzi’s (1997) Finitenessº as a phase-head (cf. Chomsky 2008). I review the arguments for each of these assumptions next.

4.1 Preverbal Subjects, Clitics, and Finitenessº as a phase-head

First, I will assume in line with Barbosa (1995) and Alexiadou and Anagnostopoulou (1998) that the verbal head in Asturian bears [+D] features that may check Tº’s [EPP] feature by virtue of raising to Tº, as shown in the schematic derivation in (19) below. With (19), I will contend that preverbal subjects in Asturian instantiate either A’-moved Focus constituents or base-generated Topic constituents, as argued for European Portuguese in Barbosa (1995) and Raposo (2000).


a. \[TP \ Tº [+V, EPP] [v^P [vº V [+D, +V] \ldots]] \] \ Tº agrees with V [+V]

b. \[TP V [+D, +V] Tº [+V, EPP] [v^P [vº tV]] \] \ V raises and [+D] checks Tº’s [EPP]

Second, I will follow Fernández-Soriano (1993, and references therein) and assume that clitics in Asturian are analyzed as Xº agreement features, which are mapped in the TP-extended domain as argued in Sportiche (1996) and shown in (20) below.\(^4\)

(20) \[[\text{CliticP Cliticº [\text{TP Tº \ldots}]] \] \[\text{[Adapted from Sportiche (1996)]}\]

---

\(^4\) Evidence for the Xº-status of clitics in Asturian comes from the ungrammaticality of interpolation in this Western Iberian language: Clitics must be adjacent to the verb, and no other element (e.g., the negative marker) may break this adjacency. Regarding the location of clitics in the phrase marker, although I do not provide any independent evidence for the mapping of clitics in a CliticP projection in the TP-extended domain, I will argue that assuming this analysis for clitics in Asturian observes two conditions: (a) this analysis captures naturally that clitics are always found in preverbal position with tensed verbs in almost all modern Romance languages, with Western Iberian languages instantiating the exception to this observation; and (b) assuming the clitic and the verb form a unit when the verb moves past the clitic, this analysis will be shown to account for enclisis/proclisis alternations without resorting to excorporation in the sense of Roberts (1991).
Third, I will assume in line with Chomsky’s (2008) phase system that both CP and \( v^*P \) are phases, “where C is a shorthand for the region that Rizzi (1997) calls ‘the left-periphery’” (Chomsky 2008: 143). Following Rizzi’s (1997) decomposition of the CP, I assume a left-periphery structure as that in (21).

(21) \([\text{Force}^\circ \text{Force}^\circ \text{Topic}^\circ \text{Focus}^\circ \text{Finiteness}^\circ \text{[TP T}^\circ\ldots\text{]]]])\]

4.2 Enclisis/Proclisis Alternations in Asturian: An Analysis

I contend that clitic placement alternations in Asturian can be explained by assuming that Finiteness\(^\circ\) (Fin\(^\circ\)) constitutes what Chomsky (2008) considers the CP-phase. The analysis proposed feeds from Rizzi (1997) and Chomsky (2008) and their proposals for connecting C\(^\circ\) and T\(^\circ\) as in (22):

(22) a. For Rizzi (1997), Finiteness\(^\circ\) shows a strong morphological connection with T\(^\circ\).
   b. For Chomsky (2008), T\(^\circ\) inherits its agree (\(\varphi\)-) and probe (EPP) features from C\(^\circ\).

I argue that Fin\(^\circ\) is a phase-head (cf. Chomsky 2008) which observes the condition stated in (23). I contend that the proposed edge condition of Fin\(^\circ\) can be satisfied either by an element undergoing A’-movement to the left-periphery passing through [Spec, FinP], or by the closest available head in the structure moving to Fin\(^\circ\).

(23) In Asturian, Fin\(^\circ\) is a phase-head with an edge condition which triggers and ensures the displacement of an element.

As I will show next, this analysis allows me to account for enclisis/proclisis alternations in Asturian not only in the matrix environment, but also for the position of the clitic we find in the finite subordinate context.

5 Enclisis/Proclisis Alternations in Matrix Contexts and the Role of Fin\(^\circ\) as a Phase

As I showed in section 2.1 above, enclisis arises in the matrix environment in Asturian in verb-initial contexts, after preverbal non-quantified subjects and with Clitic Left-Dislocated Topic constituents. Proclisis, on the other hand, shows up with the negative marker, and preverbal wh- and Focus constituents. I will show in the following sections how the analysis I propose accounts for the clitic pattern we find in each of these instances.
5.1 Enclisis in Matrix Contexts and the Edge-Condition of Finº

I contend that in the absence of A’-movement or a closer head to Fin° than T°, the edge condition I propose for Fin° in (23) forces T° to raise as last-resort to Fin° picking up the clitic(s) on its way up and accounts for the enclisis we find in these instances. Consider a verb initial context as that in (24), which I analyze as in (25) 5.

(24) Téoles tayaes [*Les teo]
    have1SG-themCL cut
    ‘I have them (my hands) cut.’
    [Álvarez, Llames]

(25) [FinP teoles Fin° [CliticP teo les [TP teo … tayaes]]]

If preverbal non-quantified subjects are Topic-like elements as I argued in section 4.1, the enclisis we find with both a preverbal subject in (26) and a Clitic Left-Dislocated structure in (27) is amenable to the same analysis under the following terms: if both preverbal subjects and Clitic Left-Dislocated Topics are base-generated in preverbal position and not derived as instances of A’-movement 6, T° raises to Fin° to license its edge condition and enclisis arises as a result. The details are shown in the derivations (28) and (29) for the sentences in (26) and (27) respectively.

(26) El xenru matóse nun accidente na mina [*Se mató]
    the son-in-law killed3SG-rflCL in-an accident in-the mine
    ‘His son-in-law got killed in an accident in the mine.’
    [González, Comedies]

5 As the reader may observe in the derivation in (25), a caveat is in order at this point. Clitic° is closer to Fin° than T°, so one may wonder why T° and not Clitic° must raise to Fin° to satisfy its edge-condition proposed in (23). Two different approaches may adduce to account for it: Either the clitic is a “morpho-phonological deficient” element of sorts and thus not a suitable element to license Fin°’s edge-condition, plausibly related to the analysis of clitics as X° Agreement that I entertain, or the clitic occupies a “criterial” projection in Clitic° and is frozen in place (cf. Rizzi 2007 for “criterial freezing”), preventing it from subsequent movement to Fin°. Since either of these two proposals would prevent the clitic from moving further up in the structure, I leave this discussion here open for future research.

6 If Topic elements are indeed base-generated and not derived as an instance of A’-movement, they should not be subject to the wh-island constraint. As the examples in (i) and (ii) below show, this prediction is borne out.

(i) El xenru nun sé [ónde se mató]
   The son-in-law not know1SG where rflCL killed3SG
   ‘I do not know where his/her son-in-law got killed’

(ii) Eso, yo nun sé [por qué lo sabes]
    That I not know1SG for what itCL know2SG
    ‘That, I do not know why you know it’
(27) Eso sábeslo per leer les cartes  [*Lo sabes]
that know2SG-itCL for read-INF the cards
‘That, you know it from reading the (tarot) cards.’  [González, Comedies]

(28) [TopicP el xenru[+Top] [Topicº [+Top] [FinP matóse Finº [Clinicº mató se [TP mató ...]]]]]

(29) [TopicP eso[+Top] [Topº [+Top] [FinP sábeslo Finº [Clinicº sabes lo [TP sabes ...]]]]]

5.2 Proclisis in Matrix Contexts and the Edge-Condition of Finº

Proclisis on the other hand is analyzed as a result of satisfying the edge condition of Finº in (23) either by the movement of a closer head to Finº than Tº, as I claim to be the case with the negative marker, or by A’-movement passing through [Spec, FinP], as I claim to be the case of both wh- and Focus constituents. Consider now the effect of the negative marker, which correlates exclusively with a proclitic pattern as in (30).

(30) Nun me mancó  [*mancóme]
not meCL hurt3SG
‘S/he didn’t hurt me.’  [Orton, Mayordomu]

Following Zanuttini’s (1997) analysis of the negative marker in different Romance languages, I assume that the negative head is licensed in a NegP projection that takes TP as its complement. Putting together the NegP and the analysis of clitics I entertain, the resulting structure is shown in (31). I claim that for a sentence as that in (30), the negative head is closer to Finº than Tº, and thus it raises to Finº to license the edge condition of this phase head and this Negº-to-Finº movement explains the proclitic pattern we find in this case. The derivation for (30) is shown in (32).

(31) [NegP [ Negº [Clinicº [clitic(s) [TP [ Tº ...]]]]]]

(32) [FinP nun Finº [NegP nun Negº [Clinicº me Cliticº [TP mancó Tº ... ]]]]]

Turning now to (33) and (34), I follow Rizzi (1997, 2004) and assume that both Focus and wh-constituents target [Spec, FocusP] in order to license their [+Focus] criterial features. I argue that these elements reach this position by virtue of passing first through [Spec, FinP]. This intermediate step licenses the edge condition of Finº and explains the proclisis we find in (33) and (34) as in (35) and (36) respectively.

(33) Cómo t’atreves?  [*atréveste]
how rflCL-dare2SG
‘How dare you?’  [Rodríguez Medina, Gaviotes]
Next, I will discuss how the different clitic patterns we find in the finite embedded contexts can also be accounted for on the analysis I propose of Finº as a phase-head with an edge condition.

6 Enclisis/Proclisis Alternations in the Finite Embedded Contexts: que1 and que2

Demonte and Fernández Soriano (2009) argue that the complementizer que ‘that’ can appear in different heads in the left-periphery in Spanish (Sp). Using as evidence what is standardly called recomplementation patterns – an example in (42), these authors claim that the two que complementizers instantiate a que1 in Forceº and a que2 in Finº. Thus, the embedded clause in (37) receives the analysis in (38).

(37) Dijo que a ese empleado que no sabía cuánto le pagaban said3SG that to that employee that not know3SG how-much himCL paid3PL

‘S/he said that s/he didn’t know how much they paid that employee.’

(38) Demonte and Fernández Soriano (2009): Recomplementation

Dijo [ForceP [ que1 Forceº [TopicP a ese empleado]+Topic] [Topicº [+Topic] [FinP [ que2 Finº … ]]]]]

Following Demonte and Fernández Soriano’s (2009) analysis for Spanish, I extend it to Asturian and I argue that this language also exhibits a que1 in Forceº and a que2 in Finº, as illustrated in (39).

(39) [ForceP [ que1 Forceº … [FinP [ que2 Finº … ]]]]

In order to account for the enclisis/proclisis alternations we find in the finite embedded context in Asturian, I will argue that assertive predicates (cf. Hooper and Thompson 1973, Bosque 1990, among others) such as digo ‘I say’ may select either Forceº or Finitenessº. In line with the complementizer system in (39), selection of Forceº is mapped as que1 and selection of Finitenessº as que2. Consider now the data in (40):
If Forceº mapped as a *que*1 is selected by the matrix predicate *digo* ‘I say’, Tº-to-Finº is triggered in the absence of A’-movement or a closer head that may satisfy the edge condition of Finitenessº in (23). The enclitic pattern we find in (40a) is therefore derived as in (41).

(41)  \[
    \text{Digo} \quad [\text{ForceP} [\text{que1 Forceº [\text{FinP} [\text{ayúdame Finº [\text{CliticP ayuda me [TP ayuda ... ]}]}}]]]]
    
    
\]

On the other hand, if Finitenessº mapped as a *que*2 is selected, I contend that merging this complementizer in Finº licenses the edge condition of this phase head, blocks Tº-to-Finº and explains the proclitic pattern we find in (40b) as in (42).

(42)  \[
    \text{Digo} \quad [\text{FinP} [\text{que2 Finº [\text{CliticP me [TP ayuda ... ]}]}}]]
    
    
\]

Summarizing, entertaining that enclisis/proclisis alternations arise as a result of the phase-properties of Finitenessº allows me to account for these alternations as follows. An enclitic pattern obtains in the absence of A’-movement or a closer head to Finº than Tº, which raises to satisfy Finº’s edge condition and triggers enclisis as a consequence. Proclisis obtains either when there is a closer head to Finº than Tº or when an element undergoes A’-movement to the left-periphery of the clause, in which cases Tº-to-Finº is not triggered and consequently a proclitic pattern is observed. This analysis has been not only shown to account for clitic placement alternations in the matrix environment, but also in the finite embedded one: if *que* may appear in either Forceº or Finitenessº in an articulated left-periphery, the position that the complementizer occupies naturally captures whether enclisis obtains (i.e., with Forceº’s complementizer *que1*) or proclisis (i.e., with Finitenessº’s complementizer *que2*). Further evidence for the analysis proposed will be discussed next, namely the different pragmatic interpretations that enclisis/proclisis alternations give rise to in the finite embedded context, and the exclusive enclisis and interpretation we find with consecutive clauses.

7 Further predictions and evidence

Entertaining that different selection patterns and consequently different (but homophonous) complementizers are at play when accounting for the clitic pattern we find in the finite embedded context will be shown to naturally capture (a) the interpretation differences that selection of Forceº and of Finitenessº give rise to in the finite embedded context in Asturian, and (b) the
exclusive enclisis and the interpretation it generates with consecutive clauses. These two predictions are discussed next.

7.1 Pragmatic [+conviction] and selection of Force° or Finiteness°

Viejo (2008) and Fernández Rubiera (2009) show that enclisis/proclisis alternations in finite embedded contexts as those in (40) correlate with different interpretations. Enclisis is reported to give rise to an interpretation that marks the content of the embedded clause as part of the belief state of the matrix predicate’s subject or the speaker, what I call a [+conviction] pragmatic interpretation. Consider the example in (43). A fragment that cancels the [+conviction] interpretation of the content in the embedded clause that shows enclisis as that in brackets is perceived as pragmatically inadequate.

(43) Digo qu’ayúdame [#pero nun toi seguru] [+conviction]
say1SG that-help3SG-IND-meCL but not am sure
‘I say that s/he helps me, #but I am not sure (that s/he does help me).’

In contrast with (43), the fragment in brackets is not perceived as pragmatically inadequate when the embedded clause shows proclisis as in (44), entailing that when the embedded clause exhibits proclisis, it encodes a [-conviction] pragmatic interpretation.

(44) Digo que me ayuda [pero nun toi seguru] [-conviction]
say1SG that meCL help3SG-IND but not am sure
‘I say that s/he helps me, but I am not sure (that s/he does help me).’

If the different clitic patterns in (43) and (44) relate to the selection of Force° or Finiteness° respectively and the position that the different que complementizers occupy in the structure, the different pragmatic [conviction] readings we find with enclisis and proclisis in the examples above can be naturally accounted for by the analysis I propose. I contend that selection of Force° mapped as que1 correlates with a [+conviction] interpretation, whereas selection of Finiteness° mapped as que2 gives rise to a [-conviction] interpretation.

Putting together the position of the que1 and que2 complementizers and the edge condition of Fin° I propose in (23), the different clitic patterns and interpretation differences we observe in (43) and (44) can be captured as shown in the structures in (45) and (46) respectively.
A second piece of further evidence, the structure and interpretation of consecutive clauses, is discussed next.

7.2 Consecutive Clauses and Exclusive Selection of Force°

If *que* instantiates two different but homophonous complementizers mapped in Force° or in Finiteness° in the left-periphery of the clause, *que1* and *que2* respectively, we would expect to find examples in which only Force° *que1* is realized. I claim that this is indeed what we find in consecutive clauses, a relevant example below:

\[(47) \text{Yera tan pija } [\text{que llamábenla Bambi}] [\text{*la llamaben}] \]

\[
\begin{align*}
\text{was3SG so preppy/posh that called3PL-IND-herCL Bambi} \\
\text{‘She was so preppy/posh that they used to call her Bambi.’[From TV Series “El Chigre”]} \\
\end{align*}
\]

On the analysis I propose, the *que* complementizer we find in consecutive clauses as that in (47) instantiates exclusively Force° and *que1*. The enclitic pattern arises as a result of the Fin°’s edge condition in (23) triggering last-resort T°-to -Fin° movement in the absence of A’-movement passing through the embedded [Spec, FinP] or a closer head to Fin° than T°. The details for (47) are shown in the structure below.

\[(48) \text{Yera ta pija … } \]

\[
\begin{align*}
\text{was3SG so preppy/posh} \\
\end{align*}
\]

Furthermore, if consecutive sentences as that in (47) instantiate exclusively *que1*, we would expect that only a [+conviction] interpretation be readily available. The inadequacy of the fragment in brackets in (49) indicates that this is indeed the case.

\[(49) \text{Yera tan pija que llamábenla Bambi, [#pero nun la llamaben asina]} \]

\[
\begin{align*}
\text{was3SG so preppy/posh that called3PL-IND-herCL Bambi but not her called that-way} \\
\text{‘She was so preppy/posh that they used to call her Bambi, #but they didn’t call her that.’} \\
\end{align*}
\]
8 Conclusions and further questions

In this paper, I have presented in section 2 different matrix environments where enclisis and proclisis alternations are observed in Asturian, and I discussed in section 3 how previous analyses relying on phonological filters have accounted for these alternations, concluding that none of them predict the availability of enclisis in the finite embedded context, a clitic pattern that can be found in Asturian.

In order to account for enclisis and proclisis alternations in Asturian, I have argued in section 4 for an analysis in terms of Rizzi’s (1997) Finitenessº (Finº) being a phase-head (cf. Chomsky 2008) with an edge condition, a condition that can be satisfied either by an element undergoing A’-movement to the left-periphery of the clause or by the closest available head in the structure. As I showed in section 5, enclisis obtains in the absence of A’-movement or a closer head to Finº than Tº. Proclisis shows up on the other hand under two circumstances: either there is an element undergoing A’-movement to the left-periphery, which passes through [Spec, FinP] and licenses Finº’s edge-condition, as I claim to be the case of wh- and Focus constituents, or there is a closer head to Finº than Tº, as I argue to be the case of the negative marker.

Extending Demonte and Fernández Soriano’s (2009) analysis of the complementizer system in Spanish to Asturian, I have shown in section 6 how selection of Forceº mapped as que1 explains the availability of enclisis in the finite embedded context: similarly to matrix environments, Tº-to-Finº is triggered in the absence of A’-movement or a closer head. Selection Finº mapped as que2 on the other hand is predicted to trigger exclusively proclisis, as merger of this complementizer in Finº licenses this phase-head edge condition.

Further predictions and evidence were discussed in section 7. First, I illustrated the different interpretations that enclitic and proclitic patterns give rise to in the finite embedded context in Asturian in terms of what I call [+conviction] and [-conviction] pragmatic readings. I have shown that these different readings can be easily explained under my analysis as follows: Selection of Forceº mapped as que1 explains both the enclitic pattern and the [+conviction] interpretation, while selection of Finº mapped as que2 accounts for the proclitic pattern and the [-conviction] reading we find in this case. Second, I showed how the exclusive enclitic pattern we find in consecutive clauses in Asturian and the [+conviction] interpretation it gives rise to can also be accounted for with the same analysis: consecutive clauses have been argued to select exclusively Forceº mapped as que1, accounting uniformly for the enclitic pattern and the [+conviction] reading.

For future research, it remains to be determined whether similar interpretation differences in the finite embedded clause can be traced in other languages, and how these may correlate with the complementizer system and its interaction with the proposed phase-status of Finitenessº.
References

Asturian Corpus Bibliography
[Translated by Ramón d’Andrés Díaz].

References


Contour Tones and Prosodic Structure in Medúmba

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1 Introduction

This paper investigates the phonetics and phonology of contour tones in Medúmba, a Grassfields Bantoid language of Cameroon. Not only are contoured syllables shown to be longer in duration than level syllables of all shapes, but the distributions of phonological processes such as High Tone Anticipation (HTA) and sentence initial downdrift are sensitive to the relative positions in which contoured and level syllables appear. Evidence reveals that variation in the application of HTA and downdrift can be attributed to differences in the prosodic positions in which contoured and level syllables occur. Specifically, contoured syllables are preferred in prominent positions over their level-toned counterparts both at the level of the foot and at the level of the intonational phrase.

Two possible explanations are considered for the above facts. The first is a tonal prominence account similar to de Lacy (2002) whereby contour tones associate to strong positions due to the inherent prominence associated with their tonal properties. The second is a weight-based account whereby contour tones associate to heavy syllables, which are in turn attracted to prominent positions. Though Medúmba does not display a general distinction in vowel length, evidence from some loanwords which can be produced with variable vowel length (and which display concomitant variation in prosodic behavior) supports a weight-based account. An analysis of prominence asymmetries between contoured (heavy) and level (light) syllables is provided within the framework of Optimality Theory (Prince & Smolensky 1993).

2 Overview of Tone and Contour Formation in Medúmba

Medúmba has been analyzed as a 2-level tone system with underlying H and L tones (Voorhoeve 1971). The language also exhibits extensive downstep and downdrift behavior. Phonetic patterns of downdrift, whereby a H tone is produced at a lower pitch level than a preceding H tone when an overt L tone intervenes, are consistent with what Stewart (1965) referred to as ‘automatic downstep’. This process is arguably analogous to (nonautomatic) downstep, or the lowering effect found on the second of two H tones which are separated by a floating L tone. I therefore represent both processes in the same way (↓) for the sake of simpler exposition1.

---

1See Genzel & Kügler (2011) for phonetic evidence from Akan (a language with a similar tone system to Medúmba) that the lowering effect of nonautomatic and automatic downstep is identical, suggesting that
In addition to level H and L tones, Medumba exhibits both falling and rising contours (1). Due to the relatively free occurrence of contour tones on all syllable types in the language, Zhang (2002) categorizes Medumba as one of the least restricted contour tone systems crosslinguistically.

(1) | **HL** | **LH** |
--- | --- | --- |
CVN | bén | Relativizer |
CVO | ndáp ‘hit’ (consecutive form) | láp ‘hit’ |
CV | bó | Habitual |

Since the work of Pike (1948) and based on subsequent work by Yip (1989) and many others, phonologists have subscribed to the notion that contour tones in African languages are not unitary entities (as they have been argued to be in a number of East Asian languages), but are rather comprised of sequences of level tones. Evidence for this kind of analysis comes from parallelisms between sequences of level tones on disyllabic words and contours on monosyllabic words. In Medumba, alternations between monosyllabic and disyllabic forms of the same root are found in which a melody of L.H (or H.L) distributed across two syllables is condensed into a contour once the second root syllable dropped. In (2), the verbs làbó ‘hit’ and nèná ‘go’ are shown occurring in their disyllabic forms sentence-finally (2a,c), and in their obligatory monosyllabic form sentence-internally2 (2b,d). Once again, raised arrows (↑) represent downstep and downdrift.

(2) Alternating Verb Roots in Disyllabic L.H and Monosyllabic LH Form

- a. mó làbó
  1SG hit
  ‘I have hit it.’
- b. mó Ṽláp Ṽmbũ
  1SG hit dog
  ‘I have hit the dog.’
- c. mó nèná
  1SG go
  ‘I have gone.’
- d. mó Ṽnèn Ṽndáná
  1SG go market
  ‘I have gone to the market.’

There are a number of verb roots, typically of CV shape, which do not have a disyllabic form, and instead are always produced with a contour. Examples of such verbs are in (3).

(3) Contoured Verbs with No Disyllabic Alternation

- a. kó ‘like / love / want’
- b. Ṽxǔ ‘have’
- c. pí ‘rot’
- d. nɔ? ‘lie down’

It is likely that these verbs were also once disyllabic, and that their second syllable was lost, leading to the permanent association of two tones to a single syllable. Another domain in which contoured morphemes are plentiful, and where such contours likely originated from the two processes are best treated as a single phonological process.

2Note that where downstep/downdrift is marked before a LH contour (↑x), this is meant to indicate that the H of the contour is lowered.
the historic loss of syllables and reassociation of stranded tones, is in the tense/aspect system. A list of contoured tense and aspect markers is given in (4).

(4) Tense Markers with Contour Tones
nóù Distant Past 1 (DPST1)
lù Distant Past 2 (DPST2)
bò Habitual (HAB)
tjwën Progressive (PROG)

Examples (2b) and (2d), as well as all of the examples in (3) and (4) constitute what will be referred to for the remainder of the paper as lexical contours. One final way in which contour tones can be formed in Medumba is through the association of a floating tone morpheme to a word. For example, the words bàm ‘sack’ and kò ‘lance’ are both produced with a low tone in isolation. When used in the possessive construction ‘sack of the chief’ and ‘lance of the chief’, however, each word is produced with a LH rising tone (5). Voorhoeve (1971) shows convincingly that this rising tone is the result of the association of the floating H ‘associative morpheme’ which docks to the first noun in each phrase to create the possessive construction.

(5) L Tone Nouns in Isolation and in Possessive Constructions

<table>
<thead>
<tr>
<th>Noun in Isolation</th>
<th>Noun in Possessive Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>bàm ‘belly’</td>
<td>bàm mvën ‘belly of the chief’</td>
</tr>
<tr>
<td>kò ‘lance’</td>
<td>kò mvën ‘lance of the chief’</td>
</tr>
</tbody>
</table>

A number of other floating morphemes exist in Medumba which yield similar morphological contours as in (5) when they dock to a word bearing the opposite tone. Though such contours will be briefly discussed in the conclusion section of this paper, for the most part, the focus will focus on lexical contours. Furthermore, many of the phonological processes to be discussed are evidenced most clearly with HL contours. The discussion of LH contours will thus be quite limited, but warrants further in-depth investigation.

### 3 Differences in Phonetics and Phonology for Contoured and Level Syllables

One of the most notable phonetic properties of contoured syllables in Medumba which sets them apart from their level-toned counterparts is that vowel length is consistently longer for contoured syllables than for level syllables of all syllable types (Figure 1).
This difference in duration is not uncommon: contour tones are often associated with increased duration crosslinguistically, a phenomenon which is thought to be linked to the increased time necessary to both produce perceive $f_0$ movement (Zhang 2002, 2004).

In addition to these durational differences, two types of tonal processes in Medumba reflect a difference in the phonological behavior of contoured vs. level syllables: High Tone Anticipation and downdrift. Each will be discussed here in turn.

### 3.1 High Tone Anticipation

High Tone Anticipation occurs in Medumba when the tonal features of a H tone spread leftward onto those of a preceding L which forms a part of a HL contour (Franich 2013). An illustration of this process is given in (6).

(6) High Tone Anticipation from Question Particle to Verb

<table>
<thead>
<tr>
<th>H</th>
<th>L</th>
<th>H</th>
<th>L</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>m ə</td>
<td>f ə</td>
<td>n d ə p</td>
<td>k i</td>
<td>→</td>
</tr>
<tr>
<td>1SG</td>
<td>RPST</td>
<td>hit</td>
<td>Q</td>
<td></td>
</tr>
</tbody>
</table>

‘I hit the dog (yesterday).’

The result of HTA is that the contour on the verb, which is underlingly HL, is realized as H↓H, and the H of the question particle is realized at the same pitch level as the downstepped H of the contour. To the right of the arrow in (6), we see the $H^4H$ contour represented with the acute macron [\(\acute{}\)] over the vowel of the verb. The question particle is pronounced at the same pitch level as the preceding downstepped H since the ceiling for H tones has now been lowered for the remainder of this sentence.

The pitch tracks in Figures 2-4 show how a $H^4H$ contour (Figure 2) is realized differently from either a HL contour followed by a $^\downarrow H$ (Figure 3) or a HL contour followed by a L and a
$^4$H (Figure 4). Relevant portions of the pitch tracks are each enclosed in a dotted rectangle. Notice how the pitch drop in Figure 2 ends roughly at the same level as the following H tone, whereas those in Figures 3 and 4 drops much lower than the level of the following H tone.

Figure 2: HTA Results in H to Downstepped H Contour

“The bird saw the dog (a long time ago).”
Figure 3: No HTA Results in HL Contour Followed by Downstepped H

"The bird has not seen the dog."

Figure 4: HL Contour Followed by L and Downstepped H

"The bird did not see the dog (a long time ago)."
An important generalization about HTA is that it cannot target two consecutive syllables. For example, in a sequence of three words bearing HL contours, only the second of these contours will be targeted for HTA, as in (7b). In this context, application of HTA such that it only targets the first syllable is considered ungrammatical (7b). Likewise, HTA targeting both the first and second syllables is considered highly questionable. Again, \[ \hat{\cdot} \] symbolizes a H↓H contour, indicating that a syllable has been targeted for HTA. Syllables targeted for HTA are also bolded here.

(7) HTA Targeting Consecutive Syllables is Prohibited

a. ã\(_3\) \textipa{b\textsubscript{3} ng\textsubscript{u}}
   Ange HAB run.away
   \textit{‘Ange always runs away.’}

b. *ã\(_3\) \textipa{b\textsubscript{o} ng\textsubscript{u}}
   Ange HAB run.away
   \textit{‘Ange always runs away.’}

c. ?? ã\(_3\) \textipa{b\textsubscript{3} ng\textsubscript{u}}
   Ange HAB run.away
   \textit{‘Ange always runs away.’}

As seen in (8), multiple non-consecutive syllables can be targeted for HTA within a sentence.

(8) Multiple Non-consecutive Syllables May Be Targeted for HTA

û lú t\textipa{f\textsubscript{3}ák nd\textsubscript{5p} kí}
2SG DPST HOD1 hit Q

\textit{‘Did you hit (it) that morning?’}

Upon closer examination of the distribution of HTA, however, it appears that this process can target the first syllable of a trisyllabic sequence in some cases, rather than the second (9).

(9) HTA Targets the First Syllable in Some Trisyllabic Sequences

a. ã\(_3\) \textipa{z\textsubscript{i} ng\textsubscript{u}}
   Ange HOD1 run.away
   \textit{‘Ange ran away a couple of days ago.’}

b. *ã\(_3\) \textipa{z\textsubscript{i} ng\textsubscript{u}}
   Ange HOD1 run.away
   \textit{‘Ange ran away a couple of days ago.’}

c. ã\(_3\) t\textipa{f\textsubscript{3}ák ng\textsubscript{u}}
   Ange HOD2 run.away
   \textit{‘Ange ran away this morning.’}

d. *ã\(_3\) t\textipa{f\textsubscript{3}ák ng\textsubscript{u}}
   Ange HOD2 run.away
   \textit{‘Ange ran away this morning.’}

---

\(^{3}\)In rapid speech, tone production is highly variable and may result in something phonetically similar to multiple consecutive instances of HTA. However, if asked specifically to rate the tone patterns in (7a-c), speakers highly prefer the form in (a). Likewise, when producing careful speech, speakers unfailingly apply HTA such that it only targets the second syllable in this sequence.
As can be seen from examples (9b,d), failure to apply HTA targeting the first syllable in these utterances is considered flatly ungrammatical.

Why should HTA target the second syllable in some trisyllabic contexts (as in (7)), but the first in others (as in (9))? One of the main differences between the examples in (7) and those in (9) is the tone of the second syllable: while the habitual marker $bô$ in (7) bears a HL contour underlyingly, the hodiernal markers $\ddot{z}i$ and $\ddot{f}âk$ in (9) both bear level H tones. I will argue in §4 that this difference in tone is associated with a difference in prosodic status for these two morphemes: specifically, syllables bearing contours are drawn to the head position of a binary foot, while those bearing level tones tend to associate with the non-head position. The domain of HTA, I will argue, is the foot, and those syllables targeted for HTA will always be in head position of the foot. Before moving on to discuss the details of this analysis, I will bring up one more context—sentence initial downdrift—in which differences in phonological behavior between contoured and level syllables seem to signal a difference in prosodic structure.

### 3.2 Downdrift

As mentioned in §2, Međumba has a process of downdrift whereby the second H tone in a HLH sequence is produced at a lower pitch level than the first H. This process has been argued to occur in parallel grammatical contexts to downstep and effects a similar level of pitch lowering on the second H tone, leading us to posit that this process is more akin to a regular phonological process than a purely phonetic effect of tonal coarticulation. In (10), we see an example of downdrift in a HLH sequence. Downdrift is represented here with a raised downward arrow $\downarrow$.

(10) Downdrift in a HLH Sequence

```
\textit{mô \ ʃô \ ʰngû}
```

$1SG \ RPST \ run.away$

‘I ran away yesterday.’

In some cases, downdrift appears be blocked from occurring, however. For example, when the first H and L of a HLH sequence are realized as level tones on a disyllabic subject, they fail to trigger downdrift on the H of a following HL contoured syllable, such as the distant past morpheme$^4$ (11).

(11) Downdrift Blocked from Occurring After a H.L Subject

```
\textit{ndôktô \ ʃû \ ʰnô}
```

$\text{doctor \ DPST \ go}$

‘The doctor left.’

$^4$Note that there are additional factors (phonological, morphological and syntactic) which may serve to block downdrift in various environments. The scope of this paper is far too narrow to account for all of these factors, and future work will need to continue to investigate them.
If, however, a subject is used which bears a HL contour rather than a sequence of level H and L, downdrift does result on the distant past morpheme (12).

(12) Downdrift Possible After a HL Contoured Subject

\[ \text{â¿³ ¹lû nè³nó} \]

Ange DPST go

‘Ange left.’

Recall that contour tones in African languages are typically treated as sequences of level tones, rather than single units. In principle, then, there should be no reason for a sequence of HL to behave differently phonologically when realized across two syllables than when it is realized on a single syllable. How, then, can this difference be explained? I will argue that the same prosodic difference mentioned previously which causes contoured syllables to be attracted to the head of a foot causes these syllables also to be drawn to the initial position of an intonational phrase. I will argue that it is the positioning of a HL sequence with respect to this prosodic position that allows some sequences, but not others, to trigger downdrift on a following H tone. In §4, I discuss the details of such a proposal.

4 Prosodic Structure and Prominence Asymmetries Between Contoured and Level Syllables

Before we may move onto the formal analysis of the puzzle presented in §3 regarding the difference in behavior between contoured and level syllables with respect to HTA and downdrift, it will be necessary to develop a more detailed sketch of the prosodic units we have discussed and illustrate how such units influence the application of these phonological processes. I will first discuss these matters at the level of the foot, and then at the level of the intonational phrase.

4.1 The Foot

Though foot structure has been argued to exist in a number of tone languages which do not appear to utilize stress, this structure has not been described in previous work on the Grassfields languages. Evidence for foot structure in tone languages is often less straightforward than that used for languages which are non-tonal, and can vary greatly from language to language. For this reason, before discussing the relationship between HTA and foot structure, I will provide a brief account of evidence from positional vowel contrast neutralization and tone assignment in loanwords to elucidate the structure and construction of feet in Medumba. As will be seen, evidence suggests that Medumba builds trochaic feet which are optimally disyllabic and which are built from right to left.

4.1.1 Positional Neutralization in Vowel Contrasts

Positionally-based differences in contrast realization within a word have often been linked to differences in prominence between syllables. Hayes (1995) notes that it is common for vowel
contrasts to be fully realized in the strong syllable of a foot, but neutralized to some degree in the weak syllable. In a number of Niger-Congo languages, prominence asymmetries between root-initial and noninitial syllables are common, and various authors have suggested that such asymmetries are best captured as a consequence of foot structure (Akinlabi & Urua 2003; Downing 2004; Harris 2004; Urua 1999). Medumba displays a high degree of positional neutralization in both disyllabic noun and verb roots. In the first vowel of the root, all vowel contrasts can be realized. On the second vowel, however, only schwa can appear (13)\(^5\).

\[
\begin{align*}
(13) & \quad \text{Positional Vowel Neutralization in Noun and Verb Roots} \\
& \quad \text{a. sáŋó ‘bird’} \\
& \quad \text{b. vôyó ‘dust’} \\
& \quad \text{c. žló ‘fat’} \\
& \quad \text{d. lénó ‘know’} \\
& \quad \text{e. tfúbó ‘speak’} \\
& \quad \text{f. kúbó ‘cut’}
\end{align*}
\]

As can be seen, a full array of vowel contrasts is available on V1 of the words in (14), and only schwa appears in V2 position. This suggests a prominence asymmetry within the word reminiscent of trochaic (strong-weak) foot structure. In the sections that follow, we will see additional evidence in support of this structure.

### 4.1.2 Tone Assignment in Loanwords

Another way that foot structure is seen to be manifested in the phonology of Medumba is in loanwords from English. For the most part, disyllabic loanwords are assigned tone based on the stress pattern of the source word: H tone is assigned to the stressed syllable, and L tone is assigned to the unstressed syllable (14).

\[
\begin{align*}
(14) & \quad \text{Default Stress-Based Tone Assignment in Disyllabic English Loans} \\
& \quad \text{a. kísım ‘kitchen’} \\
& \quad \text{b. súkó ‘sugar’} \\
& \quad \text{c. ndóktó ‘doctor’}
\end{align*}
\]

This tone assignment strategy for loanwords is common for many African languages, and may suggest that H tones associate to prominent positions more easily than L tones (de Lacy 2002). However, when we move to trisyllabic words with initial stress, the picture becomes a bit more complicated. The stressed syllable in each source word is still assigned a H tone in the loan; however, the second syllable, which is unstressed in the source language, is also assigned a H tone. The final syllable, also unstressed in the source, is assigned a L tone (15).

\[
\begin{align*}
(15) & \quad \text{H Tone Assigned to Penultimate Syllable in English Loans} \\
& \quad \text{a. kábíndó ‘carpinter’} \\
& \quad \text{b. sásídè ‘Saturday’} \\
& \quad \text{c. ěmbási ‘embassy’}
\end{align*}
\]

If we assume that feet in Medumba must contain at least one H tone, the mismatch between stress and H tone assignment in (15) can be explained by positing that the language

---

\(^5\)Note that an apparent exception for this generalization comes from echo vowels following glottal consonants in some verb roots, which I assume constitute an entirely different phenomenon. Compounds are also excluded from consideration since they display unique prosodic characteristics in a variety of domains.
builds disyllabic trochees from right to left. Rather than form an suboptimal foot with two 
L toned syllables, the language assigns an additional H tone to the penultimate syllable of 
each trisyllabic word. The proposed foot structure for each of these words is represented in 
(16).

(16) Right-to-left Footing of Trisyllabic English Loanwords
   a. ká ( bí.nd` )\textsubscript{FT}
   b. sá ( sí.dè )\textsubscript{FT}
   c. ém ( bá.sì )\textsubscript{FT}

As can be seen in (16), assignment of a H tone to the penultimate syllable of trisyllabic 
English loans evinces a trochaic foot pattern where the penultimate syllable is the head of 
the trochee.

To summarize, I have provided evidence from positional vowel neutralization and tone 
assignment in loanwords that Med\textsubscript{0}mba builds optimally disyllabic trochees from right to 
left. I now move on to show how the distribution of HTA is influenced by foot structure and, 
specifically, by a prominence asymmetry between contoured and level syllables at the level 
of the foot.

4.1.3 High Tone Anticipation

We discussed in §3 the fact that HTA cannot target two syllables which are linearly adjacent. 
Since we know that Med\textsubscript{0}mba builds optimally disyllabic feet, this pattern can be accounted 
for if we simply assume that the domain of HTA is the foot. Recall that tone assignment 
in loanwords provides us with evidence that feet are built from right to left. From this, we 
would predict that, in a series of three syllables where both the first and second syllables 
could potentially be targets for HTA, the second syllable will be targeted. As we have seen, 
this is precisely the pattern we find when the three syllables in the sequence all bear contour 
tones (17).

(17) HTA Targets σ\textsubscript{2} in a Sequence of 3 Contours
   a. â₃ bô ngu \textsubscript{Ange HAB run.away}
      ‘Ange always runs away.’
   b. *â₃ bô ngu \textsubscript{Ange HAB run.away}
      ‘Ange always runs away.’

The above pattern gives further evidence for the right-to-left construction of feet as in 
(18).

(18) Foot Structure for Three Consecutive HL Contoured Syllables

\[
\begin{array}{ccc}
  \text{HL} & \text{HL} & \text{HL} \\
  \checkmark & \checkmark & \checkmark \\
  (\text{â₃} & (\text{bô} & \text{ngu} \\
\end{array}
\]

‘Ange runs away regularly’

However, recall that if we look instead at a sequence of three syllables where the second 
syllable bears a level H tone instead of a HL contour, we find that HTA is forced to target 
the first syllable in the sequence (19).
(19) HTA Targets $\sigma_1$ in a Contour-Level-Contour Sequence

\[ \text{a. } \hat{\text{a}}3 \text{ zí ngû } \quad \text{b. } \hat{\text{a}}3 \text{ ūfák ngû} \]

Ange HOD1 run-away

‘Ange ran away a few days ago.’

Ange HOD2 run-away

‘Ange ran away this morning.’

This pattern of HTA seems to occur for any sequence of three syllables with a HL.H.HL pattern, regardless of the syllable shapes in question or any other segmental features they may carry. It thus seems as if this shift in the target of HTA between the examples in (17) and those in (19) is related to the tone pattern found on the second syllable.

But what is it, exactly, that makes these syllables behave differently from one another? Recall our original proposal that HTA is constrained to occurring within a trochaic foot, and that this process always targets the head of a foot. It is quite common crosslinguistically for tone spreading of the regressive variety to target positions which are prosodically prominent (Hyman & Schuh 1974). Perhaps, then, the difference between contoured and level syllables stems from the fact that contours are preferred in head (prominent) position of a foot, while level toned syllables are preferred in the nonhead position. Applying our original analysis to the data at hand, the foot structure proposed for the examples in (19) would be as in (20).

(20) Proposed Foot Structure for Contour-Level-Contour Sequences

\[ \text{HL } \text{H } \text{HL} \]

\[ \text{\underline{\text{\textasciitilde}} } \]

\[ \text{(a3 } \text{ zí } ) \quad (\text{n gû}) \]

‘Ange runs away regularly’

As can be seen in (20), the default right-to-left footing pattern has been altered in order to ensure that prominent positions are occupied by syllables bearing contours, rather than those bearing level tones. In the following section, we will see that the phenomenon of contoured syllables being attracted to prominent positions is not limited solely to feet, but is also evidenced at the level of the intonational phrase.

4.2 The Intonational Phrase

I will now return to the phenomenon of sentence initial downdrift and attempt to explain variation in the application of this process using a similar prominence-based account as was provided for HTA. First, I provide a brief overview of the structure of the intonational phrase. This prosodic unit has been analyzed in many languages as roughly coinciding with the clause or sentence, or what Downing (1970) referred to as the ‘root clause’. In Medumba, this is precisely domain over which a sequence of downsteps or downdrifts begins and ends. Downdrift and downstep begin to occur after the first H tone in the first conjoined clause in (21), but the pitch ceiling is reset at the first syllable of the second clause to around the same pitch level as the initial H tone of the sentence.
(21) Downstep/Downdrift Reset at IP Boundary

\[
\text{bāk } [\chi\text{ù} \text{nzá} \text{ñ} \text{ndðð} \text{bò} \text{iñò} \text{ñ} \text{ù}] \text{IP ndððñá}
\]
3PL.EX have bird FOC only two INF give FOC 2SG but

\[
[\text{ù} \text{fit} \text{nò} \text{kwí} \text{tí} \text{ndó} \text{ñ} \text{ù} \text{iñm}] \text{IP}
\]
2SG may INF take DEM potatos PROX ten

‘We have only two birds for you, but you may have those ten potatoes.’

In Figure 5, the first syllable of each of the two conjoined intonational phrases is circled with a dotted line. In comparing these two circled portions with the rest of the pitch track, the pitch reset at the start of the second IP is quite clear.

Figure 5: Downstep and Upstep in the Intonational Phrase

Moving forward based on our assumption that the intonational phrase is the domain over which sequences downstep and downdrift begin and end, one approach to explaining the variation we see with respect to HL contoured syllables vs. H.L level syllable sequences is to assume that the former, but not the latter, is included within the IP when it occurs in subject position. Thus, for the sentences we saw previously in (11) and (12) (repeated here in (22a,b)), the IP structures would be as written to the left of each sentence.

(22) Intonational Phrase Structures for H.L Level and HL Contoured Subjects

a. ndðktò lù nè^I nô → ndðktò \text{IP} [lù nè^I nô] \text{IP}

doctor DPST go

‘The doctor left.’
Patterns in the placement of left edge boundary tones also provide evidence for the different prosodic status of sentence-initial words. Notice that, in the following sentences, a H boundary tone attaches to underlying toneless pronouns before a level-toned H syllable, but not before a HL contoured syllable (23).

(23) Variation in H Boundary Tone Attachment Before HL Contoured vs. Level Syllables

<table>
<thead>
<tr>
<th>a. bák îlu nè³nó</th>
<th>b. bák ŏnì 4ndõná</th>
</tr>
</thead>
<tbody>
<tr>
<td>2PL.EX eat banana</td>
<td>2PL.EX DPST go market</td>
</tr>
<tr>
<td>‘We have eaten the banana.’</td>
<td>‘We went to the market a long time ago.’</td>
</tr>
</tbody>
</table>

c. mó fò ñjón mvôn  
d. mó fò ñjón 5 mvôn
| 1SG RPST see chief  | 1SG RPST see FOC chief |
| ‘I saw the chief yesterday.’ | ‘I saw the chief yesterday (not the teacher).’ |

If we assume that the boundary H tone is associated with the left edge of an intonational phrase, its avoidance of the pronoun before a HL contoured syllable can be accounted for by assuming that the contoured syllable, rather than the pronoun, is the first element of the intonational phrase. In these cases, the boundary H associates to the contour and is absorbed by the H tone already present on the contour. Without a boundary tone to associate to it, the toneless pronoun is assigned a L tone by default. In (24), I provide the proposed IP structure for (23a), and in (25) I provide the structure for (23b). The H tone represented in autosegmental notation is meant to signify the IP boundary H tone.


Indeed, one of the rare cases in which a subject pronoun may bear a H tone before a HL contour is in subject focus constructions, where evidence suggests the focused subject occupies its own intonational phrase (Franich 2013) (26).

(26) Separate Intonational Phrases in Subject Focus Constructions

---

6What is referred to here as a ‘boundary tone’ has been historically associated in various constructions across the Mbam-Nkam languages with different tense and aspect markers, argued by some to remain morphologically productive in some of these languages (Hyman & Tadadjeu 1976). Given the presence of floating H tones at or near the left edge in such a wide variety of tense, aspect and mood configurations in Medumba and the lack of systematic correspondences between H tone and any specific morphological function in these constructions, we treat these tones as representative of a single boundary-related phenomenon.
Finally, Franich (2013) demonstrates that additional phonetic evidence serves to differentiate the IP-initial position from the proposed ‘pre-IP’ position. Nouns occurring in IP-initial position are shown to exhibit upstep while the same nouns in pre-IP position do not, and IP-initial nouns are produced with slightly longer duration than pre-IP nouns. All of this evidence taken together seems to confirm patterns similar to those discussed for the foot: 1) the initial position of the intonational phrase is a prominent position; and 2) contoured syllables are attracted to this position of prominence.

5 Tonal Prominence or Syllable Weight?

To sum up so far, I have provided an overview of variation in two tonal processes, High Tone Anticipation and sentence initial downdrift, and argued that this variation centers around a difference in the prosodic status of contoured syllables versus level syllables. Specifically, I have argued that contoured syllables are attracted to prominent positions both at the level of the foot and at the level of the intonational phrase. We have not yet identified, however, what the key difference between these two types of syllables is. One possibility is that contoured syllables are more prominent than level toned syllables purely because of their tonal properties. For example, de Lacy (2002) provides evidence from a variety of languages suggesting that H tones tend to associate to prominent positions, while L tones associate to non-prominent positions. H and L tones are thus said to be arranged hierarchically on a prominence scale, as in (27).

(27) $H > L$

Recall that we have seen evidence from Medumba loanwords that H tones are more prominent than L tones, since they are systematically assigned even to syllables which are unstressed in the source language if they would fall in the head position of a foot in Medumba. When present, however, contour tones are preferred in the head position of a foot, suggesting that the tonal hierarchy for Medumba might look as in (28).

(28) $HL, LH > H > L$

Another possibility, and one that has been investigated recently by Qu & Goad (In progress) for Mandarin Chinese, is that a bipartite relationship holds between tone height (H vs. L) and tone dynamism (contoured vs. level) with prominence such that each property may be associated with its own separate prominence scale.

However, an interesting set of facts from downdrift behavior in loanwords suggests that tone may not be the only factor driving the prominence asymmetry we see between contoured and level syllables. We have seen that a disyllabic sequence containing a level H followed by a level L cannot trigger downdrift on a following H when this disyllabic word is in subject position. However, a few trisyllabic loanwords from English of the tone melody L.H.L,
including ‘tomato’ and ‘potato’, show variation in their ability to trigger downdrift on a following H syllable when they occur in subject position\(^7\) (29).

(29) Loanwords from English Displaying Variation in Downdrift Behavior

a. Variant 1: Without downdrift

\[
\text{tùmátù řù ⁴něn ⁴ndóñá}
\]
\[
tomato DPST go market
\]

‘The tomato went to the market.’

b. Variant 2: With downdrift

\[
\text{tùmátù dù ⁴něn ⁴ndóñá}
\]
\[
tomato DPST go market
\]

‘The tomato went to the market.’

Upon closer inspection, variation with respect to downdrift after these words does not appear to be completely random: the length of the vowel of the second syllable for the word \text{tùmátù} is consistently produced as longer in the second variant than it is in in the first variant. In fact, as shown in Table 1 below, the first and third vowels of the word \text{tùmátù} are produced with roughly the same duration across the two variants, while the second vowel in Variant 2 is produced up to twice as long as the second vowel in Variant 1.

Table 1: Differences in Vowel Length for Variants of \text{tùmátù}

<table>
<thead>
<tr>
<th>Variant</th>
<th>Measure</th>
<th>V1 (ms)</th>
<th>V2 (ms)</th>
<th>V3 (ms)</th>
<th>Triggers Downdrift?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. \text{[tù.má.tù]}</td>
<td>Avg.</td>
<td>50.75</td>
<td>140.00</td>
<td>120.12</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>50.30-60.00</td>
<td>130.40-140.50</td>
<td>100.50-130.80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>3.30</td>
<td>5.00</td>
<td>13.50</td>
<td></td>
</tr>
<tr>
<td>2. \text{[tù.máːtù]}</td>
<td>Avg.</td>
<td>50.70</td>
<td>210.40</td>
<td>140.70</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Range</td>
<td>40.00-70.00</td>
<td>200.00-230.00</td>
<td>140.00-150.40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>15.30</td>
<td>12.50</td>
<td>10.00</td>
<td></td>
</tr>
</tbody>
</table>

What the data in Table 1 show is that vowel duration may be a sufficient cue for inducing downdrift in some environments. This observation calls into question the purely tonal nature of the prominence asymmetries we have discussed. As has been shown previously, contoured syllables are regularly produced with longer duration than their level-toned counterparts—perhaps this durational difference signals a vowel length distinction which enables contoured (long) vowels to trigger downdrift where level-toned (short) vowels cannot. This possibility will be explored in more depth in §6.

\(^7\)Clearly, these sentences are quite unnatural given the agentive properties assigned to a tomato. Since tone can interact in complex ways with argument structure, however, it was necessary to use rather odd constructions to test for downdrift. The context given to the participant was one in which a person dressed as a tomato (say, for Halloween) goes to the market, or where a tomato comes alive as in a children’s television show and can take on human qualities.
6 Contour Tones and Syllable Weight

The relationship between vowel duration and downdrift described for the loanwords in §6 brings up questions about the true nature of the prominence asymmetries we have observed between contoured and level syllables in Medumba. It also brings up some interesting questions with regard to the more general crosslinguistic relationship between vowel length and contour tone distribution.

6.1 A Subphonemic Weight Distinction

It has been observed for many contour tone languages that contours tend to be restricted to long vowels (Gordon 2001; Zhang 2002, 2004). This preference has been argued to have a phonetic motivation since vowels have more energy than other segment types at higher frequencies, hence allowing for better recoverability of $f_0$. Given that the tonal information in contoured syllables is more complex than in level syllables, it makes sense that contours should be preferred on syllables with higher energy profiles. Indeed, a distinction in weight based solely on vowel length is quite common, especially where tonal phenomena are concerned.

However, this connection between vowel length and contour tones has mostly been described in existing literature for languages which have clear phonemic vowel length distinctions. As previously mentioned, Medumba has few minimal pairs for vowel length, and these are largely found in loanwords. On the whole, evidence of a phonemic length contrast outside of the contour-level distinction is scarce. However, it is not out of the question that a full phonemic contrast could eventually emerge in the language. In some cases, such as that of Korean and the Weert dialect of Dutch, contour tones have been argued to give way to long vowels (Kown 2003; Heijmans 2003). (Yu 2010) shows that listeners perceive contoured syllables as having longer duration than level-toned syllables, even when these syllables are acoustically equivalent in duration. The author proposes that changes such as those which appear to have occurred in Korean and the Weert dialect may have been brought about due to hypocorrection (Ohala 1993), such that listeners, after repeatedly hearing certain types of contoured syllables as longer, eventually begin to interpret the additional duration as intentional on the part of the speaker. An intermediate stage of the change may thus involve listeners treating (some) contoured syllables as underlyingly long, and level toned syllables as underlyingly short. This bears striking resemblance to the situation we find in Medumba.

6.2 Representing Syllable Weight

Since there appears to be ample evidence that the weight distinction proposed for Medumba is largely phonetically-driven, I appeal to a model of syllable weight which is also grounded in phonetic considerations. Gordon (2002a) shows a connection between phonological weight and the relative perceptual energy between syllables, which is stated as a measurement of loudness over time. Syllables which behave as heavy in a given language also tend to display greater perceptual energy. As we have seen, vowel length for contoured syllables is significantly longer than that for level-toned syllables for all syllable shapes. Since the total...
perceptual energy of a segment is calculated as a function of segment duration, perceptual energy will naturally be higher for contoured syllables than for level toned syllables in Medumba. Gordon formalizes this model using a set of structurally simple phonological representations built from skeletal slots. In the case of a weight opposition between syllables with long vowels and all other syllables, the representations of syllables bearing long vowels vs. those bearing short vowels are shown in (30). The feature SYLLABIC is used to indicate acoustic properties of nuclear segments such as increased intensity.

(30) Vowel Length Weight Distinctions Under Gordon’s Skeletal Slot Model

a. Representation for (C)VV(C)  
   $((X) [XX]_{\text{RIME}}(X))_{\sigma}$  
   $\hat{\text{Syll}}$

b. Representation for (C)V(C)  
   $((X) [X]_{\text{RIME}}(X))_{\sigma}$  
   $\hat{\text{Syll}}$

In the following section, I will build on these representations in developing a constraint set to analyze the observed prominence asymmetries between heavy (contoured) and light (level) syllables in Medumba. Since vowel length has been posited to play a central role in determining syllable weight, contoured syllables will henceforth be marked with long vowels (Vː), and level syllables with short vowels (V).

7 Analysis of Prominence Asymmetries in Medumba

Having established the criteria on which weight distinctions are based in Medumba, I begin by outlining a set of constraints which will capture prominence asymmetries between heavy and light syllables at the level of the foot. Recall that, all else being equal, Medumba opts to build disyllabic trochees. To model this, I will first incorporate the constraint TROCHEE from Prince & Smolensky (1993) which dictates that all feet must be left-headed (31). I propose that this constraint is undominated in Medumba and will thus exclude it from the tableaux that follow.

(31) TROCHEE: All feet are left-headed

To model the proposed disyllabic foot structure, I will utilize the constraint FTBIN(SYLL) from Prince & Smolensky (1993) (32).

(32) FTBIN(SYLL): Feet are disyllabic

Finally, we must formulate a constraint that can enforce the attraction of heavy/contoured syllables to the head position—the leftmost position—of a foot. To do this, I will adapt an alignment constraint which makes reference to syllables bearing long vowels based on the representation presented in §6 (33).

(33) ALIGN( $[((X) [XX]_{\text{RIME}}(X))_{\sigma},\text{L,Ft,L}]$): Syllables bearing long vowels must align with the left edge of a foot
The tableau in (34) shows the crucial ranking of the constraints FtBin and Align([XX],L) which ensures that disyllabic feet will be built even at the expense of having a heavy syllable in non-head position.

(34) Disyllabic feet: FtBin » Align([XX],L)

<table>
<thead>
<tr>
<th>/ áːz bɔː ndábɔ /</th>
<th>FtBin(syll)</th>
<th>Align([XX],L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ́ ( áːz bɔː ) ( ndábɔ )</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. ́ ( áːz ) ( bɔː ndá ) ( bɔː )</td>
<td><em>!</em></td>
<td>*</td>
</tr>
<tr>
<td>c. ́ ( áːz ) ( bɔː ) ( ndábɔ )</td>
<td><em>!</em></td>
<td></td>
</tr>
</tbody>
</table>

Another property of feet in Medumba that we have discussed is that, all else being equal, they are build from right to left. To model this, I invoke the constraint Align(PrWd,R,Ft,R) from McCarthy & Prince (1993a) which dictates that a prosodic word align at the right edge with a foot\(^8\) (35).

(35) Align(PrWd,R,FtR): The right edge of each prosodic word must match the right edge of some foot.

As we have seen, when a mix of heavy/contoured and light/level syllables occurs, footing may be altered in order to ensure that heavy syllables occur in the head position of feet. The crucial ranking of Align([XX],L) » Align(PrWd,R) which produces this pattern is demonstrated in (36).

(36) Heavy syllables in head position of a foot: Align([XX],L) » Align(PrWd,R)

<table>
<thead>
<tr>
<th>/ áːz zǐ ngũː /</th>
<th>FtBin(syll)</th>
<th>Align([XX],L)</th>
<th>Align(PrWd,R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ́ ( áːz zǐ ) ( ngũː )</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. ́ ( áːz ) ( zǐ ngũː )</td>
<td>*</td>
<td><em>!</em></td>
<td></td>
</tr>
<tr>
<td>c. ́ ( áːz ) ( zǐ ) ( ngũː )</td>
<td><em>!</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In (37), we see that this ranking also ensures that a sequence of three equal heavy (or light) syllables will obey default right-to-left footing.

(37) Right-to-left foot building: FtBin » Align([XX],L) » Align(PrWd,R)

<table>
<thead>
<tr>
<th>/ áːz bɔː ngũː /</th>
<th>FtBin(syll)</th>
<th>Align([XX],L)</th>
<th>Align(PrWd,R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ́ ( áːz ) ( bɔː ngũː )</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. ́ ( áːz bɔː ) ( ngũː )</td>
<td>*</td>
<td>*</td>
<td>*!</td>
</tr>
<tr>
<td>c. ́ ( áːz ) ( bɔː ) ( ngũː )</td>
<td><em>!</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

We now move on to model prominence asymmetries at the level of the intonational phrase. To do so, several more constraints will be utilized. First, in order to capture the prominence

\(^8\)Important to mention is the fact that words in Medumba are largely monosyllabic, meaning that feet and prosodic words will quite often be constructed across morphological word boundaries. The non-isometry of prosodic and morphological words has been discussed for a variety of Bantoid languages, including Dschang, a closely related Grassfields language (Hyman 1985).
effect, I utilize the constraint \textsc{Align}(	extsc{Stress}, L, IP) which holds that a stressed syllable is always aligned with the left edge of an intonational phrase (38). This constraint is unviolated in the language, and I thus exclude it from the tableaux in this section.

\begin{equation}
\textsc{Align}(	extsc{Stress}, L, IP) : \text{A stressed } \sigma \text{ is aligned with the left edge of an Intonational Phrase (IP)}
\end{equation}

In addition to this constraint, I utilize Prince’s (1990) \textsc{Stress-to-Weight Principle}, which holds that stressed syllables should be heavy (39).

\begin{equation}
\textsc{Stress-to-Weight} : \text{Stressed } \sigma \text{'s are heavy}
\end{equation}

I also invoke the constraint \textsc{Ident-IO[Vowel-Length]} (Gordon 2006) which militates against vowel lengthening (40).

\begin{equation}
\textsc{Ident-IO[Vowel-Length]} : \text{Vowel length in the input must correspond to vowel length in the output}
\end{equation}

To illustrate the ranking between \textsc{Ident-IO[V-Length]} and \textsc{STW}, we can look at an example which contains no contoured syllables. In (41), we see that \textsc{Ident-IO[V-Length]} outranks \textsc{STW}, yielding an output in which the initial syllable of the intonational phrase remains short. Stressed syllables are underlined.

\begin{equation}
\text{Faithfulness to vowel length preferred over lengthening to observe } \textsc{STW} : \textsc{Ident-IO[V-Length]} \gg \textsc{STW}
\end{equation}

\begin{tabular}{|c|c|c|}
\hline
        & \text{mó ð o njó nð } & \text{Ip} \\
\hline
\textbf{a.} & \text{ró} & \text{IP} & \text{IP} \\
\hline
\textbf{b.} & \text{mó ð o njó nð } & \text{IP} & \text{IP} \\
\hline
\end{tabular}

Turning now to examples in which heavy/contoured syllables are available to satisfy \textsc{STW}, we must allow for material at the beginning of the sentence to be skipped to ensure that a heavy syllable resides in IP-initial position. To model this effect, \textsc{Ident-IO[V-Length]} will crucially outrank an additional \textsc{Parse-Phrase} constraint, which requires that all prosodic phrases are parsed into an intonational phrase (42) \footnote{Note that systematic differences have yet to be identified between the Prosodic Word and Prosodic Phrase levels, so these units are used interchangeably for our purposes here. In respecting the Strict Layer Hypothesis (Selkirk 1984) in assuming that each layer of the prosodic hierarchy strictly dominates the next layer down, I formulate the \textsc{Parse} constraint in terms of prosodic phrases rather than prosodic words.}

\begin{equation}
\textsc{Parse-Phrase} : \text{Every Phonological Phrase (PP) belongs to an Intonational Phrase}
\end{equation}

Due to the ranking of \textsc{Ident-IO[V-Length]} over \textsc{Parse-Phrase}, where heavy syllables are available, violations of \textsc{Parse-Phrase} will be tolerated in order to both allow for a heavy syllable to occur in IP-initial position and to avoid lengthening of short syllables to satisfy \textsc{STW} (43).
Contour Tones and Prosodic Structure in Medumba

(43) Heavy syllables in IP-initial position; extraprosodicity preferred over vowel lengthening: ID[V-LENGTH] » STW » PARSE-PHRASE

<table>
<thead>
<tr>
<th>/ ndôktô lû: jôn sàŋô /</th>
<th>ID[V-Len]</th>
<th>STW</th>
<th>PRS-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. *</td>
<td>( ndôktô )PP IP</td>
<td>( lû: jôn )PP ( sàŋô )PP</td>
<td>IP</td>
</tr>
<tr>
<td>b.</td>
<td>IP</td>
<td>( ndôktô )PP *( lû: jôn )PP ( sàŋô )PP</td>
<td>IP</td>
</tr>
<tr>
<td>c.</td>
<td>IP</td>
<td>( ndôktô )PP *( lû: jôn )PP ( sàŋô ) PP</td>
<td>IP</td>
</tr>
</tbody>
</table>

A ranking summary for prominence asymmetries in Medumba is given in (44).

(44) Ranking summary for prominence asymmetries

a. Heavy/contoured syllables in head position of a disyllabic foot:
   FtBIN(syll) » Align([XX],L) » Align(PrWd,R)

b. Heavy/contoured syllables in initial (stressed) position of an intonational phrase:
   ID[Vowel-Length] » Stress-To-Weight » Parse-Phrase

8 Conclusion

To conclude, I have presented evidence for prominence asymmetries in Medumba between syllables bearing contour tones and those bearing level tones. I have argued, based on variation in the application of two tonal processes—High Tone Anticipation and downdrift—that syllables bearing contours are preferred both in the head position of a foot and in the initial (stressed) position of an intonational phrase. I have furthermore argued that these asymmetries, rather than being driven by purely tonal properties, are based in durational differences between contoured and level syllables which contribute to a subphonemic weight distinction in the language. This distinction has been modeled using Gordon’s (2002a) representations for phonetically-motivated syllable weight.

A number of questions still remain with respect to the nature of contour tones in Medumba, the most pressing of which having to do with the relative prominence or weight of HL contours and LH contours. Though I have framed the discussion in this paper in terms of a contour vs. level dichotomy, many of the processes discussed here deal only with HL contours and thus cannot be directly used to diagnose the status of a LH contour. Further investigation into potential phonetic and phonological differences between these two types of contours will be necessary. I have also limited the discussion in this paper to lexical contours, though an understanding of how these processes are influenced by morphological contours will of course be useful for developing a more comprehensive theory of tone-vowel length-weight interactions in Medumba.

For now, I have highlighted a number of previously unreported prosodic phenomena in Medumba which have proven useful in disentangling some of the very complicated tonal patterns in this language. Furthermore, I have proposed that Medumba exhibits signs of prominence asymmetries which could potentially be analyzed in terms of stress. This work aims to contribute to the growing body of literature aimed at understanding the complex crosslinguistic interactions between tone, prominence, and syllable weight.
9 References


Contour Tones and Prosodic Structure in Medumba


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Asymmetric Correlations between English Verb Transitivity and Stress

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Massachusetts Institute of Technology

1 Introduction

It is well-known that lexical categories affect phonological behaviour (Smith 2011). Perhaps the most famous example of this is the stress asymmetry between nouns and verbs in English (Chomsky and Halle 1968): English disyllabic nouns tend to be trochaic while the verbs are iambic. Compare, for example, compress the noun with compréss the verb. This statistical tendency is extremely strong; according to Kelly and Bock (1988)’s lexical counts, 94% of such nouns are trochaic, versus 31% of the disyllabic verbs.

A possible account for this stress asymmetry proposed by Kelly and Bock (1988) and Kelly (1988) is that lexical stress is influenced by prosodic environment. Nouns are more likely to occur in environments that favour trochaic stress since they often follow unstressed determiners, for example. Verbs are more likely to occur in environments that favour iambic stress since they are often followed by unstressed suffixes, among other factors.

This approach makes no direct reference to the lexical categories of noun and verb and in fact predicts that finer-grained lexical categories with differing prosodic contexts may display different stress behaviour. In particular, since transitive verbs are often followed by the unstressed determiner of their direct object, we might expect that transitive verbs are more likely to be iambic than intransitive verbs. I show in this paper that this prediction is borne out in English through a statistical analysis of English disyllabic verbs in the CELEX corpus (Baayen et al. 1995).

I then explore an additional mechanism by which prosodic context may influence word stress: the avoidance of phrase-final stress, which is attested cross-linguistically (Gordon 2000). I show that the likelihood for a disyllabic stem to be trochaic correlates with the frequency with which it occurs phrase-finally. I then propose a grammatical analysis based on Optimal Paradigms (McCarthy 2005) that synchronically captures these effects, and explore its typological predictions.

2 Statistical analysis

The CELEX English database (Baayen et al. 1995) provides phonological, morphological, syntactic and frequency data for (British) English lemmas and wordforms. Included among the syntactic data is verb subcategorization information, including two binary yes/no features
Transitive (“is this a verb which can (sometimes) take a direct object?”) and Intransitive (“is this a verb which (sometimes) cannot take a direct object?”).

Based on these binary features, I encoded a ternary transitivity feature with the values obligatorily transitive, ambitransitive and obligatorily intransitive. Obligatorily transitive verbs were those with Transitive coded as Y and Intransitive coded as N, such as *appoint*. Ambitransitive verbs were those with Transitive Y and Intransitive Y. These included verbs that can optionally drop their direct object, such as *eat* (*John ate the rice / John ate*), and verbs that undergo causative alternations such as *walk* (*Mary walked / Mary walked the dog*). Obligatorily intransitive verbs had Transitive N and Intransitive Y, such as *chuckle*.

The following table shows a simple lexical count of the disyllabic verbs of English, crossing the ternary transitivity distinction with stress pattern.

<table>
<thead>
<tr>
<th></th>
<th>Trochaic</th>
<th>Iambic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obligatorily transitive</td>
<td>506 (39%)</td>
<td>804 (61%)</td>
</tr>
<tr>
<td>Ambitransitive</td>
<td>357 (55%)</td>
<td>293 (45%)</td>
</tr>
<tr>
<td>Obligatorily intransitive</td>
<td>227 (64%)</td>
<td>130 (36%)</td>
</tr>
</tbody>
</table>

Table 1: Percentage of verbs that are trochaic, split by transitivity type

We observe that the percentage of verbs that are trochees steadily increases as we move from obligatorily transitive to obligatorily intransitive verbs, with ambitransitive verbs being intermediate. Fisher’s exact tests show that the percentage of verbs that are trochaic or iambic significantly differs by transitivity (obligatorily transitive versus ambitransitive: \( p = 8.686e^{-12} \ll 0.01 \), ambitransitive vs obligatorily intransitive: \( p = 0.009 < 0.01 \)).

It is possible that this simple statistical test masks other confounds. In particular, stress may be influenced by the morphological structure of the verb. The following table, which splits up the verbs according to *CELEX’s* morphological status field shows that while morphological status does have an effect on stress patterns, there are no significant reversals of the transitivity trend within each morphological category.

<table>
<thead>
<tr>
<th>Morphological status</th>
<th>Percentage trochaic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monomorphemic</td>
<td>49%</td>
</tr>
<tr>
<td>Zero-derived</td>
<td>82%</td>
</tr>
<tr>
<td>Root-including</td>
<td>15%</td>
</tr>
<tr>
<td>Complex</td>
<td>13%</td>
</tr>
<tr>
<td>Obscure origin</td>
<td>12%</td>
</tr>
<tr>
<td>All verbs</td>
<td>39%</td>
</tr>
</tbody>
</table>

Table 2: Percentage of verbs that are trochaic split by transitivity type and morphological status. (s. and n.s. indicate that the difference in percentages between successive percentages within a row were significant or insignificant according to a Fisher’s test, respectively.)
Asymmetric correlations between English verb transitivity and stress

Another factor that certainly has an influence on stress is the syllabic shape of the verb. To incorporate this into the statistical analysis, I conducted a logistic regression to predict whether a verb would be a trochee or iamb, with transitivity, morphological category and syllable shape and first-level interactions of morphological category and transitivity, and shape of syllable 1 and syllable 2, as main factors.

The table below shows the main factors that were revealed to be significant. Positive estimates reveal that the factor is positively correlated with trochaicity. Hence, the positive estimate for the obligatorily intransitive factor shows that obligatory intransitivity significantly correlates with higher trochaicity when compared with ambitransitive verbs, while the negative estimate for the obligatorily transitive factor shows that obligatory transitivity significantly correlates with lower trochaicity when compared with ambitransitivity, even when the possible confounds of morphological category and syllable shape are controlled for.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Estimate</th>
<th>Std Error</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transitivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obligatorily intransitive</td>
<td>1.1096</td>
<td>0.4759</td>
<td>0.02 *</td>
</tr>
<tr>
<td>Obligatorily transitive</td>
<td>-2.0291</td>
<td>0.3667</td>
<td>3.14e-08 ***</td>
</tr>
<tr>
<td>Morphological status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complex</td>
<td>1.4087</td>
<td>0.4273</td>
<td>0.00098 ***</td>
</tr>
<tr>
<td>Obscure</td>
<td>3.8825</td>
<td>2.873</td>
<td>0.00406 **</td>
</tr>
<tr>
<td>Undetermined</td>
<td>3.0771</td>
<td>0.4468</td>
<td>5.72e-12 ***</td>
</tr>
<tr>
<td>Syllable 1 Weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VC</td>
<td>0.5076</td>
<td>0.1788</td>
<td>0.00452 **</td>
</tr>
<tr>
<td>VV</td>
<td>1.0916</td>
<td>0.2142</td>
<td>3.47e-07 ***</td>
</tr>
<tr>
<td>VVC</td>
<td>2.8359</td>
<td>0.3855</td>
<td>1.90e-13 ***</td>
</tr>
<tr>
<td>VVCC</td>
<td>3.7360</td>
<td>1.2065</td>
<td>0.00196 **</td>
</tr>
</tbody>
</table>

+ 5 significant interactions between morphology and transitivity

Table 3: Significant factors in the logistic regression. Baselines were ambitransitive for the transitivity factor, monomorphemic for the morphological status category, and the lightest syllable weight of V for the syllable weight factors.

A nested model comparison via ANOVA of the factors in Table 2 with and without the two transitivity factors further confirms that the inclusion of transitivity significantly improves the fit of the model ($p = 5.33e-14 < 0.01$).

To summarise the finding of this section, we find a significant effect of transitivity on the stress pattern of English disyllabic verbs, with transitive verbs being more likely iambic and intransitive verbs more likely trochaic.

## 3 Grammatical analysis

Kelly and Bock (1988) and Kelly (1988) suggest a possible account for the noun/verb stress asymmetry that is rooted in the prosodic environments in which nouns and verbs find themselves. Nouns are more likely to occur in an environment that favours trochaic stress, while verbs tend to occur in an environment that favours iambic stress. For instance, nouns are more likely to be preceded by unstressed elements such as determiners, while verbs are likely to be followed by unstressed elements, such as the determiner of a direct object. Verbs are
also more likely to be followed by unstressed suffixes such as -ing and -ed, when the verb ends with /t,d/.

This postulated tendency was borne out in corpus studies performed by Kelly and Bock (1988) and Kelly (1988), which found that there was indeed an increased tendency for nouns to occur in environments whose rhythmic requirements favoured trochaic stress and vice versa with iambs.

In addition, they performed pseudoword production experiments and found that speakers were more likely to pronounce a word with trochaic stress in a trochaic environment, and iambic stress in an iambic environment, as with the pseudoword pernew below.

(1) a. The big pernew escaped.
    b. SAVE the pernew quickly.

In proposing this account, Kelly and Bock (1988) and Kelly (1988) clearly had a diachronic mechanism in mind, wherein trochaic words that occurred in an iambic-favouring environment drifted towards iambicity via mispronunciations and misperceptions, as reflected in this quote:

“Over time, a word that consistently occupied a particular rhythmic context might come to reflect the pressures imposed by that context in its citation stress pattern.”  (Kelly and Bock 1988)

However, the results of the pseudoword experiments show that English speakers synchronically apply the effects of prosodic influence in generalising to novel forms, motivating a synchronic grammar of the noun/verb and transitivity asymmetries. The grammar I propose in this section is implemented via a MaxEnt weighted constraint model (Goldwater and Johnson 2003; Wilson 2006), since these effects are gradient rather than categorical.

In evaluating the output of a MaxEnt grammar for a given input and a set of constraints $C_i$ with weights $w_i$, we calculate first the harmony of each output candidate as the weighted sum of its constraint violations.

(2) \[ w(x) = \sum_i w_i C_i(x) \]

The probability of the grammar yielding a particular candidate $x$ as the winner out of a set of candidates $Y$ is then:

(3) \[ P(x) = \frac{e^{-w(x)}}{\sum_{y \in Y} e^{-w(y)}} \]

The particular constraints we will use in the analysis are introduced in the following subsections.
3.1 *Clash, *Lapse

The specific OT constraints governing the rhythmic effects of lexical environment are the familiar *Clash and *Lapse, which apply both word-internally and at the phrasal level.

(4) a. *Clash: * for any pair of adjacent syllables that are both stressed.
    b. *Lapse: * for any pair of adjacent syllables that are both unstressed.

We have seen how the action of *Clash and *Lapse leads to the noun/verb asymmetry according to Kelly and Bock (1988) and Kelly (1988). Their account is easily extended to account for the transitivity asymmetry, borrowing directly from one of their own arguments: verbs are likely to be followed by an unstressed determiner of a direct object, but only when they are transitive.

While promising, this account is likely to be incomplete, as this effect is likely to be relatively small. In addition, there is no particular pressure on intransitive verbs to be trochaic.

One place to look for additional effects of prosodic environment on stress are among edge effects, which are not discussed in Kelly and Bock (1988) and Kelly (1988), but which are well known to have a large influence on lexical stress.

3.2 NonFinality and *Crowd

In fixed stress languages, there is an asymmetry between left and right edges (Hyman 1977; Gordon 2002). There are very few peninitial stress languages but a considerable number with penultimate stress. This is usually attributed to the effect of an OT constraint NonFinality: do not stress the final syllable of a word.
Gordon (2000) suggests a possible reason for the existence of NonFinality based on tonal crowding. Most, if not all, languages have right-edge boundary tones. If the final syllable of a phrase is stressed, both the phrasal boundary tone as well as the pitch accent due to stress would have to be accommodated on the same final syllable. Hence, there is a pressure to retract or remove stress from the phrase edge. We can define the constraint *Crowd to capture this particular pressure:

(5) *Crowd: * for any phrase-final syllable that is stressed.

How does phrase-level *Crowd lead to word-level NonFinality? Gordon (2000) hypothesises “that final stress avoidance at the word level is driven by phrase-final instantiations of words and that stress patterns of phrase-medial words are constrained to mimic their phrase-final counterparts.” In languages where NonFinality appears to be undominated, as in the languages with consistent penultimate stress, this could be implemented via high-ranking output-output correspondence to the isolation form of the word.

In languages where output-output correspondence is ranked low while the constraint on tonal crowding is ranked high, on the other hand, we get a language where phrase-final syllables avoid stress, but phrase-medial word-final syllables do not. This is an attested pattern of behaviour in numerous languages such as Cayuga, Onondaga, varieties of Yupik, Chickasaw and Hill Mari (see Gordon (2000) and references therein).

I argue that English occupies an intermediate position between these two extremes, and that phrase-final frequency of individual words plays a role. Words that frequently occur phrase-finally are more likely to retract stress from their final syllable, while other words that rarely occur in phrase-final position are quite happy to accommodate a final stress.

### 3.3 Testing for *Crowd effects in English

Since English word order is subject-verb-object, phrase-final items are more likely to be nouns than verbs. Similarly, intransitive verbs are far more likely to be phrase-final than transitive verbs. This can be verified through a count of 2.46 million words from the Penn Treebank’s part-of-speech tagged Wall Street Journal and Brown corpora (Marcus et al. 1993). If we count the number of times a word stem appeared phrase-finally, that is, before a comma or sentence-finally, and not followed by a syllabic suffix such as -ed and -ing, and dividing it by the number of times the word appears in the corpus, we obtain the following average phrase-final frequency by part of speech:

<table>
<thead>
<tr>
<th>Part of Speech</th>
<th>Average phrase-final frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noun</td>
<td>28.90%</td>
</tr>
<tr>
<td>Verb</td>
<td>7.84%</td>
</tr>
<tr>
<td>Intransitive verb</td>
<td>14.16%</td>
</tr>
<tr>
<td>Ambitransitive verb</td>
<td>8.43%</td>
</tr>
<tr>
<td>Transitive verb</td>
<td>6.31%</td>
</tr>
</tbody>
</table>

Table 4: Average phrase-final frequency of different lexical categories in English within the Penn Treebank
This count confirms that nouns and intransitive verbs are indeed more likely to appear phrase-finally than transitive verbs.

If English occupies this intermediate position between languages with across-the-board application of NonFinality and languages where only phrase-final syllables repel stress, we would expect both nouns and intransitive verbs to be more likely to retract stress, and hence for disyllabic nouns and intransitive verbs to be more frequently trochaic, which is precisely the pattern observed in §2.

A logistic regression shows that the phrase-final frequency of a disyllabic word is predictive of whether it will be a trochee or an iamb. When all 6224 nouns and verbs in the CELEX corpus are considered, the correlation is highly significant ($p=2.34e-10 < 0.01$). When we isolate the 1772 disyllabic verbs in the corpus, however, the correlation between phrase-final frequency and trochaicity dips below significance ($p=0.0531$). A possible reason for this is that the phrase-final corpus frequency of low-frequency words is a very crude measure. Whether a certain word occurred in the corpus 100 times or a single time, if it never occurred word-finally, its phrase-final frequency would be 0%. Yet it is clear that the former is a systematic effect while the latter could simply be an accident of the corpus, which might not be replicated in another corpus of similar size. If we exclude the lowest information words – those with only a single instance in the corpus – and repeat the logistic regression, the correlation becomes significant ($p=0.01<0.05$, 1516 verbs). The correlation retains significance when we add in the morphological status and syllable weight factors.

Since this approach is not tied to lexical category at all, we would expect to observe the effects of *Crowd even within lexical categories. For example, a noun that tends to occur more as a direct object than a subject would have a higher phrase-final frequency and hence be more subject to *Crowd.

Repeating the logistic regression within only the class of disyllabic nouns that occur more than once in the Penn Treebank corpus, we find that the correlation between phrase-final frequency and trochaic stress is 0.055 – just above the threshold for significance. Within the class of ambitransitive verbs, the correlation stands at 0.0672 – again above the threshold for significance. There is no correlation between phrase-final frequency and stress pattern at all among the obligatorily intransitive and transitive verbs.

One reason for the failure of the noun correlation to reach significance could be that there are simply insufficient iambic nouns to make this determination, as 91.5% of the nouns remaining are trochaic. In the case of the three verb subclasses, there may simply be too few verbs (less than 1000 each) to make an accurate assessment of the correlation.

Despite the failure to find a significant effect of phrase-final frequency within lexical categories, the strong correlation within the entire set of disyllabic nouns and verbs, and within the class of all verbs, show that *Crowd appears to be active in English, joining *Clash and *Lapse as a markedness constraint governing prosodic environmental influence.

### 3.4 Optimal Paradigms-based Faithfulness

The effects of markedness are counteracted by an output-output faithfulness constraint. However, we have to determine what the base form with respect to which each candidate output will be evaluated. Unlike fixed stress languages, the base cannot be the citation form since we would then expect *Crowd to apply equally to all words, regardless of lexical
category. Indeed, we would expect the prosodic environment to have zero influence on the stress pattern of a word.

In fact, it is not clear that any particular form of a word in any particular context should be the base, if frequency is indeed a factor. Rather, what we need is a “voting” mechanism: if the various prosodic contexts in which a word finds itself tend to favour trochaicity, then all forms of the word are made trochaic.

To implement this, I borrow the technology of Optimal Paradigms (McCarthy 2005), with the following tenets.

(6) a. Candidates consist of the sets of occurrences of the word in its various lexical environments, with lexical stress on the word varying between candidates.

b. Markedness constraints evaluate all members of the set, and their violations are summed.

c. The word in each lexical environment is in a correspondence relation with the word in every other lexical environment, and thus syllables of the stem are in correspondence across lexical environments. When correspondent syllables do not share the same value of [±stress], a violation of [Ident(stress)-OP is incurred. These violations are summed over all pairs of corresponding words.

The following sample tableaux illustrate the workings of the grammar.

(7) Sample MAXENT tableau for the noun *compress*. Candidates, constraint counts, and their resultant harmony values and probabilities are purely illustrative.

<table>
<thead>
<tr>
<th>/compress_N/</th>
<th>IDENT-OP</th>
<th>*CROWD</th>
<th>*CLASH</th>
<th>*LAPSE</th>
<th>w(x)</th>
<th>P(x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>the cómpress, and cómpresses, a cómpress for, ...</td>
<td>1.57</td>
<td>0.71</td>
<td>0.46</td>
<td>0.3</td>
<td>1.06</td>
<td>0.70</td>
</tr>
<tr>
<td>the compréss, and comprésses, a compréss for, ...</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>1.91</td>
<td>0.30</td>
</tr>
<tr>
<td>the compréss, and comprésses, a compréss for, ...</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>6.88</td>
<td>0.00</td>
</tr>
</tbody>
</table>

For each word with a similar profile of constraint violations, we expect the probability of it being trochaic to be 70%. On average, the probability of a noun to be trochaic should be approximately 94%, according to Kelly and Bock (1988)’s lexical counts.

On the other hand, the average transitive verb will have very different constraint violation profile, drastically lowering its likelihood to be trochaic, as in the following tableau:
Asymmetric correlations between English verb transitivity and stress

(8) Sample MaxEnt tableau for the transitive verb *compress*

<table>
<thead>
<tr>
<th>/compress_V/</th>
<th>IDENT-OP</th>
<th>*CROWD</th>
<th>*CLASH</th>
<th>*LAPSE</th>
<th>w(x)</th>
<th>P(x)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jóhn comprésses the, compréssing, I compréss a, ...</td>
<td>1.57</td>
<td>0.71</td>
<td>0.46</td>
<td>0.3</td>
<td>1.66</td>
<td>0.26</td>
</tr>
<tr>
<td>Jóhn comprésses the, compréssing, I compréss a, ...</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0.6</td>
<td>0.74</td>
</tr>
<tr>
<td>Jóhn comprésses the, compréssing, I compréss a, ...</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>6.58</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Words with this constraint profile are iambic with a probability of 74%.

The average intransitive verb would have a constraint profile intermediate between that of the average noun and the average transitive verb, resulting in an intermediate probability of being trochaic.

3.5 Discussion

One possible objection to this model is that unlike the original application of Optimal Paradigms to word paradigms, each candidate output set of lexical environments is extremely open-ended, making Eval almost impossible. One possible solution is to sample a small number of exemplar lexical environments, making evaluation more manageable.

There is a further problem: even with IDENT(stress)-OP undominated, if Eval is repeated every time a word is encountered in a new lexical environment, then we would still expect variation to occur. Say the verb *compress* is encountered once and the constraint evaluation in (8) carried out, and the iambic stress pattern is selected with 74% probability. If, the next time the verb *compress* is encountered, the trochaic stress pattern is selected instead, we would observe unwanted variation. To prevent this, we need to augment the grammar with a mechanism for storing the result of Eval on each stem stress for future reuse.

This is a variant of the more general problem of how to account for exceptions to gradient phonotactic patterns. Several such mechanisms have been proposed in the literature (see, e.g., Zuraw (2000) for discussion). Another possible mechanism that might apply to this specific scenario is stochastic memoization, a probabilistic programming technique under which the results of previous computations are stored and reused with probability proportional to their frequency of past use, with a small amount of probability set aside for the generation of novel forms by the grammar (see O’Donnell (2011) for an application of stochastic memoization to regular and irregular morphology). Under this mechanism, we would expect frequently-encountered words to have a stable form and for novel forms to be generated according to the grammar. Low frequency lexical items would be more likely than frequent forms to display variation.
3.6 Predicted typology

The language typology predicted by this model is one in which lexical category does not play a direct role in determining the stress of a word. Instead, the relative weighting of \textsc{Ident}(stress)-\textsc{OP}, markedness constraints on rhythm and restricting stressed syllables at the end of an utterance from surfacing determine the probability with which a word receives a certain stress pattern.

This typology predicts two types of language when word-level stress constraints are not fully dominant. When markedness constraints such as \textsc{*Crowd} dominate \textsc{Ident}(stress)-\textsc{OP}, the stress of individual word tokens adjusts to minimise markedness violations.

When \textsc{Ident}(stress)-\textsc{OP} is undominated, we get English-type languages, where word types have a consistent stress, but the exact form is chosen to minimise overall markedness violations across lexical environments.

When \textsc{*Crowd} is high-ranked, barring interactions with other phenomena, we predict that the English-type languages will split according to word order. In languages with SVO word order, nouns should be more trochaic than intransitive verbs, which are in turn more trochaic than transitive verbs. In languages with OVS, VOS and VSO word order, nouns should be more trochaic than verbs, but there will be no transitivity distinction, because utterances will almost always end with nouns. In languages with SOV and OSV order, verbs should be more trochaic overall than nouns, and again there should be no transitivity distinction since utterances will almost always end with verbs.

In languages with different distributions of unstressed elements than English, we also predict differences in stress patterns across lexical categories, although their effect is difficult to quantify overall. For example, if a language lacks determiners, then nouns have less pressure to be trochaic, and transitive verbs have less pressure to be iambic.

4 Alternative accounts

4.1 Phonological grammars refer directly to lexical category

An alternative to the account sketched above is that phonological grammars can simply refer to lexical category. This was the conclusion of Smith (2011), which surveys a wide range of category-specific effects across languages, and finds that while some effects may have their origin in factors such as the distinction between morphologically bound and free forms, these are unable to account for the entire gamut of category-specific effects. Such differences could be implemented via co-phonologies or via constraints indexed to lexical category. For example, the following simplified grammar could account for the majority patterns of English disyllabic stress.
Extending this account to the transitivity asymmetry is straightforward. Phonological grammars should be able to go beyond lexical category, and make reference to verb transitivity, either via an explicit feature [±transitive] that is accessible by the phonology, or by reference to the presence of some syntactic element corresponding to transitivity.

(10) OT tableau for languish, intransitive verb

This would result in a powerful framework capable of capturing any phonological differences due to lexical category or subcategory. However, unlike the prosodic environment account, this approach has no predictive power. There is no limit to the types of phonological behaviour that can be affected by lexical category, despite the fact that most cases of category-specific phenomena involve prosodic and suprasegmental features (Smith 2011). In addition, the direction of the asymmetry cannot be predicted: there is no particular reason for nouns to be more trochaic than verbs, nor for intransitive verbs to be trochaic than their transitive counterparts. The opposite patterns could be captured just as easily within this framework.

The predicted stress typology in this model is thus much less constrained than the one predicted in §3.6. Any lexical category can potentially display different stress behaviour, and we expect there to be no correlation with word order. There should also not be significant differences in stress behaviour within lexical categories apart from the usual effects of gradience.

4.2 Phonological privilege correlates with prototypicality

Among the generalisations Smith observes in her survey of category-specific effects (Smith 2011) is that nouns tend to display more phonological privilege than verbs, in the sense that nouns tend to support more phonological contrasts ($\mathcal{F} \gg \mathcal{M}$), while verbs undergo more neutralisation to unmarked structure ($\mathcal{M} \gg \mathcal{F}$). Based on this cross-linguistic tendency, Smith (2011) suggests that there is a hierarchy of phonological privilege, Noun$>$Adjective$>$Verb.
In recent work, Smith (2013) proposes that this hierarchy correlates with a hierarchy of prototypicality, extending from prototypical arguments (nouns) to prototypical predicates (verbs). The notion of prototypicality stems from a body of work on the iconicity of lexical categories (e.g. Croft (1990); Hopper and Thompson (1985)).

Furthermore, Smith (2013) suggests that these broad lexical classes can be split into subclasses based on their position on the scale of prototypicality: for instance, unergative intransitive verbs are more prototypically predicate-like, being more agentive, than unaccusative intransitives, and thus unergative verbs should display less marked phonological behaviour than unaccusative verbs. Smith (2013, 2014) argues that this is the basis for a difference in the distribution of unaccentedness among unaccusative and unergative verbs in Tokyo Japanese.

This account cannot be straightforwardly extended to the English noun/verb stress asymmetry as the choice of trochaic or iambic stress pattern cannot be framed as a difference in phonological privilege. Neither the trochaic nor iambic stress pattern is more universally marked than the other – they simply obey different markedness constraints. Faithfulness plays no role.

If we take the slightly different approach of assuming that it is not phonological privilege but fidelity to markedness constraints such as Align-Stress-Right that varies along the prototypicality scale, the noun/verb stress asymmetry suggests that in English, more prototypical predicates (verbs) are more strongly subject to Align-Stress-Right than more prototypical arguments (nouns). We would then expect that verbs that are less prototypically predicative should align with nouns in obeying Align-Stress-Right to a lesser degree. Hopper and Thompson (1985) suggest that transitive verbs are indeed more prototypically predicative than intransitive verbs, meaning that we correctly expect intransitive verbs to behave more like nouns in being more trochaic than transitive verbs.

Granting the assumptions made above, this approach only partially explains the stress asymmetries of English. It does not predict which particular markedness constraint(s) prototypicality correlates with. Instead of Align-Stress-Right, we could have chosen Non-Finality, and obtained the reverse stress asymmetry. The typology predicted by this approach is thus much less restrictive than that discussed in §3.6. It is slightly more restrictive than the typology predicted in §4.1, in that stress behaviour does not vary freely with lexical category but is expected to pattern in a cline from nouns, to adjectives, to intransitive verbs, to transitive verbs, with the particular cline in a language dependent on which markedness constraints prototypicality correlates with. No correlations of stress behaviour with word order are expected, and no variation within lexical categories is expected, save where the lexical category can be split into further subcategories at different positions along the prototypicality scale.

5 Conclusion

In this paper, I have shown that going beyond the noun/verb stress asymmetry in English, there is a stress asymmetry between intransitive and transitive verbs: the former tend to be trochaic and the latter iambic. I showed how Kelly and Bock (1988) and Kelly (1988)’s theory that lexical stress is influenced by prosodic environment, originally proposed to extend to
Asymmetric correlations between English verb transitivity and stress
the noun/verb stress asymmetry, can be straightforwardly extended to the stress-transitivity asymmetry. I further augmented their proposal by illustrating that Gordon (2000)’s theory of NonFinality, when implemented within an Optimal Paradigms (McCarthy 2005) style “voting mechanism” for lexical stress, predicts that words that are more frequently phrase-final are more likely to retract stress. A corpus study showed that there is indeed a positive correlation between phrase-final frequency and intransitivity, and between phrase-final frequency and trochaicity.

This correlation remains just a correlation, and not direct evidence for causation. Further work in the form of psycholinguistic experiments to test whether English speakers are aware of the stress-transitivity correlation and use avoidance of phrase-final stress in determining the stress of a nonce word, could help to elucidate the link between prosodic environment and transitivity as well as its synchronic status. Further evidence would come from a cross-linguistic investigation of other languages in which lexical stress and lexical category interact, to see if they fit into the typology predicted in §3.6.

6 References


Micro-Variation within Bizkaiera Basque: Evidence from RCs

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1 Introduction

This paper establishes the syntactic representation and derivation of relative clause (RC) constructions in the Basque dialect Bizkaiera from a Minimalist approach (Chomsky 2000). First, it identifies two micro-dialects (micro-dialect A and micro-dialect B) within Bizkaiera. Micro-dialect A allows an RC with the external DP being in subject or direct object position and with an indirect object or adjunct gap (1a-b), while micro-dialect B does not (2a-b).

   ‘The boy that I gave the apple to has fallen down.’

   b. [[e₁ Etorri nintzen] mutilekaz] etxie erosi dabe.
  ‘The boys that I came with has bought the house.’

(2) a. [[e₁ Sagarra emon dotsaten] *mutileri/*mutilei] jeusi ein da.
   ‘The boy that I gave the apple to has fallen down.’

   b. [[e₁ Etorri nintzen] *mutilegaz/*mutilek] etxie erosi dabe.
  ‘The boy that I came with has bought the house.’

Second, in order to rule out that this micro-variation arises due to the different syntactic structure observed crosslinguistically, it is shown that both micro-dialects follow the Head raising strategy: [DP [CP DP₁ [C [TP . . . t . . .]]] D]

Finally, after establishing that Multiple Agree has morphological consequences in Bizkaiera Basque, it is shown that the difference between the micro-dialects under discussion relies on the status of their respective P. In micro-dialect A the P is a Probe with unvalued D and φ-features (3a), whereas in micro-dialect B the P has an unvalued D feature but lacks unvalued φ-features (3b).

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Thus, micro-dialect A can build RCs with the external DP being in subject or direct object position and with an indirect object or adjunct gap (1a-b) due to the unvalued ϕ-features in its Ps. Micro-dialect B, on the other hand, cannot build RCs with the external DP being in subject or direct object position and with an indirect object or adjunct gap (2a-b) due to the lack of the unvalued ϕ-features on its Ps.

2 Micro-dialects

In this section two micro-dialects within Bizkaiera dialect are presented: micro-dialect A and micro-dialect B. The evidence for their similarities and differences come from RCs. First the background of the people that speak these micro-dialects is introduced and then the similarities and differences between micro-dialect A and B are presented.

2.1 Speakers of micro-dialect A and micro-dialect B

In Mundaka, a town in Bizkaia, two micro-dialects can be identified: micro-dialect A and micro-dialect B. The speakers of both micro-dialect A and micro-dialect B (Group A and Group B, respectively) were born and raised in Mundaka and are native speakers of Spanish and Basque. According Zuazo’s (2010) dialectal classification, the Basque dialect that both groups speak is Bizkaiera.

The difference between the two groups relies on the historical context in which they acquired their languages. Group A went to school during Franco’s dictatorship (1939-1975), a time that Basque was banned, and therefore they had Spanish as the only language of instruction. Group B went to school following the establishment of the bilingual educational system, and regarding the model of education it had the Standard Basque as the language of instruction. Thus, they were exposed to and learned the standard variety of Basque from an early age.

2.2 Similarities and differences between the two micro-dialects

Both micro-dialects can construct RCs when the gap of the relative clause is in a subject (4a-c) or object position (4d-f).

   ‘I know the boy that bought the apple.’

   ‘I gave the house to the boy that bought the apple.’

   ‘I came with the boy that bought the apple.’
Furthermore, both micro-dialects rule out the RCs in which the external DP is the complement of a different postposition to the one that the Head carries. These are some examples (5a-d):

(5)

   ‘I run with the boy that I gave the apple to.’

b. [[ei] Baloie ekarri dotsaten] *mutileri/*mutilegaitzik etorri naz.
   ‘I came because of the boy that I gave the apple to.’

   ‘The apple is for the boy that I came with.’

   ‘Bitor asked about the house I went to.’

The difference between the two micro-dialects can be found when the gap is an indirect object or an adjunct and the external DP functions as the subject or object of the main clause. Group A allows RCs with an indirect object or adjunct gap and with the external DP in the subject or direct object position (6a-d). Furthermore, notice that the main auxiliary verb agrees in number with Head of the RC. Group B, on the other hand, does not allow this type of RC (7a-d).

(6)  

Micro-dialect A

a. [[ei] Sagarra emon dotsaten] neskieri/*neskiek] etxie
   erosि deu.
   buy aux.A3sE3s
   ‘The girl that I gave the apple to bought the house.’
b. [[e₁ Sagarra emon dotsaten] neskari/ *neskak] jeusi
ein dire.
do aux.A3pl
‘The girls that I gave the apple to have fallen down.’

c. [[e₁ Etorri nintzen] neskiegaz/ *neskiek] etxie erosi deu.
‘The girl that I came with bought the house.’

d. [[e₁ Etorri nintzen] neskakaz/ *neskak] jeusi ein dire.
‘The girls I came with have fallen down.’

(7)  **Micro-dialect B**
a. [[e₁ Sagarra emon dotsaten] *neskieri/ *neskiek] etxie
erosi deu.
   buy aux.A3se3s
‘The girl that I gave the apple to bought the house.’

b. [[e₁ Sagarra emon dotsaten] *neskari/ *neskak] jeusi
ein dire.
do aux.A3pl
‘The girls that I gave the apple to have fallen down.’

c. [[e₁ Etorri nintzen] *neskiegaz/ *neskiek] etxie erosi deu.
‘The girl that I came with bought the house.’

d. [[e₁ Etorri nintzen] *neskakaz/ *neskak] jeusi ein dire.
‘The girls I came with have fallen down.’

A summary of possible relativization in micro-dialect A and in micro-dialect B is shown in Table 1 and Table 2, respectively.

**Table 1: Gramaticalization of Relativization in micro-dialect A**

<table>
<thead>
<tr>
<th>FG gap</th>
<th>FG RC</th>
<th>Subject</th>
<th>Direct Object</th>
<th>Adjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Direct Object</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Indirect Object</td>
<td>✔</td>
<td>✔</td>
<td>✖</td>
<td></td>
</tr>
<tr>
<td>Adjunct</td>
<td>✔</td>
<td>✔</td>
<td>✖</td>
<td></td>
</tr>
</tbody>
</table>
Table 2: Gramaticalization of Relativization in micro-dialect B

<table>
<thead>
<tr>
<th>FG gap</th>
<th>FG RC</th>
<th>Subject</th>
<th>Direct Object</th>
<th>Adjunct</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>Direct Object</td>
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<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Indirect Object</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Adjunct</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

3 Head raising strategy

In regard to Basque RCs, Oyharçabal (1988), Artiagoitia (1992), and Rebuschi (2003) assume the Head External Analysis (8). In this analysis, RCs are CPs adjoined to the left of the external N-head, reflecting the head-final nature of Basque. In addition, the operator, which is interpreted with the Head outside the RC, moves to the Spec-CP position, leaving a gap in its base-generated position.

While the Head Raising Analysis is proposed for Standard Basque only by Vicente (2002), it will be shown to be employed in the general Bizkaiera dialect. In this analysis, (9), the CP of RC is a complement to the external D. Moreover, the Head of the RC is base-generated inside the TP and moved to the Specifier position of the CP.

Even though it has not been proposed for Basque, Universal Grammar also provides the Head External strategy with an operator base-generated in the highest Spec-CP position.
from which the operator binds a variable within the TP (Overfelt 2009). This structure is represented in the syntactic tree (10):

```
  (10)  
    N'   NP   CP   N°   Op_i   C'   C°   TP
      |     |     |     |     |     |     |
      |     |     |     |     X+i   |     e_i  
```

According to Overfelt (2009), in Tigrinya the operator is base-generated in the highest Spec-CP position and it binds a resumptive pronoun in the form of pro occupying the gap position. This is shown in the example (11):

```
(11) ʔɨti [CP Op_i [TP Nahor [CP silamintaj e, nata dabdabe tsihiifuwa that-ms Nahor why e that-fs,ACC letter-fs write=GER-S3ms-o3fs] ʔilu] zigrom]] sabʔaj nawih ʔiju AUX=s3ms REL=wonder=GER-S3ms man-ms tall-ms Cop=s3ms

Intended: ‘The man that Nahor wonders why wrote the letter on Monday is tall’.
```

(Adapted from Overfelt 2009:60)

In this section, it is shown that Bizkaiera Basque follows the Head raising strategy (9) to build RCs. Given that the two proposed micro-dialects show no variation in this respect, no distinction between them are made. First, observing subjacency effects in a RC construction, the Head External Analysis with an operator base-generated in the Spec-CP position (12) is ruled out.

```
(12) [DP [NP [N_i ...] [CP Op_i [TP ... ei ...]]]]
```

Second, assuming that certain elements are required to hold specific structural relationships with other elements, reconstruction is used to identify the structural relationship between these elements prior to a movement operation. Thus, on the basis of reconstruction effects, scope interaction with quantifiers (Schachter 1973, Vergnaud 1974, Bianchi 1999, Alexiadou et al. 2000, Aoun and Li 2003, Salzmann 2006), idiomatic interpretation (Schachter 1973; Aoun and Li 2003) and pronoun binding (Bianchi 1999, Alexiadou et al. 2000, Bhatt 2002, Aoun and Li 2003, Salzmann 2006) are used to show that the Head of the RC was base-generated inside the embedded clause (13a) and not external to the CP (13b).

```
(13) a. [DP [CP DP_i [C [TP ... ei ...]]] D]
    b. [DP [NP [N_i ...] [CP Op_i [TP ... ei ...]]]]]
```
3.1 Detecting movement

Whether Bizkaiera requires a movement operation to build RCs is tested by looking at islands within RC constructions. If movement is involved in these constructions, be it overtly as in the Head Raising Analysis (13a) or as in the External Head Analysis with operator movement (13b), island effects will be observed. Thus, for RCs with a gap within an embedded adjunct clause and within a [+Q] embedded clause, ungrammaticality is correctly predicted and therefore, the analysis in which the operator is base-generated in the specifier position of CP (12) is excluded.

According to subjacency, each cycle of movement cannot cross more than one DP or TP, but that the movement needs to take place cyclically (Ross 1967). This restriction on movement creates an island, from which extraction will not be allowed. Thus, extraction out of a [-Q] embedded clause will not create subjacency effects because the intermediate Spec-CP position is not filled and therefore it serves as a landing site for the extracted phrase. This is confirmed in examples (14a-d), in which no subjacency effects are observed when a subject (14a), an indirect object (14b) and adjuncts (14c) are extracted out of a [-Q] embedded clause.

(14)  a. [][: [e, Ure erosiko dauela] [esan doten] umie,]
      barreska dau.
      laugh aux.A3SE3S
      ‘The boy I said that was going to buy water is laughing.’

    b. [][: [e, Arraine erosi dotsatela] [esan dauen] andrieri,]
       \DAT fish.D.ABS buy aux.A3SD3S.E1S.C say aux.A3SE3S.C woman.D.DAT
       Gernike gusteten jatso.
       Gernike.ABS like aux.A3SD3S
       ‘The woman he/she said that I bought the fish from likes Gernika.’

    c. [][: [Leirek e, atzo korridu bala] [pentseten doten] txakurregaz,]
       \ERG yesterday run aux.A3S think aux.A3SE1S.C dog.D.SOC
       korridu dot nik geur.
       run aux.A3SE1S I.ERG today
       ‘Today I ran with the dog that I think Leire ran with yesterday.’

If Bizkaiera uses movement to build RCs, it is expected to observe subjacency effects in extraction out of [+Q] embedded clauses, as the specifier position of the lower CP is filled and therefore, the movement is forced to occur across two TPs without respecting cyclic movement. Consider the following sentences (15a-c) with a subject (15a), indirect object (15b) or adjuncts gap (15c) inside a [+Q] embedded clause.
In contrast to (14a-c), the ungrammaticality of examples (15a-c) indicates that there has been a movement involved in the RC construction. Due to the fact that the intermediate Spec-CP position is occupied, movement could not happen cyclically, but had to cross two TPs, which created subjacency effects.

In conclusion, showing that having a gap inside [+Q] embedded clauses results in ungrammaticality, it is confirmed that movement to the Spec-CP position is involved in the formation of relative clauses in Bizkaiera. Thus, the analysis in which the Head is external to the CP and the operator is base-generated in the Spec-CP (16) is not a strategy for Bizkaiera Basque RC construction.

(16) \[[DP[NP[N\ldots][CP[Op_i[TP\ldots e_i\ldots]]]]]]\]

3.2 Headedness

Ruling out the option of not having movement in the construction of RCs in Bizkaiera, the two possibilities that are left are either the Head Raising Analysis (17a) or the Head External Analysis with operator movement (19b).

(17) a. \[[DP[CP[DP_i[c[TP\ldots t_i\ldots]]]]D]]\]

b. \[[DP[NP[N\ldots][CP[Op_i[TP\ldots t_i\ldots]]]]]]\]

Syntactic tests related to scope interaction, idioms and pronoun binding are applied to identify the local structural relation between the Head of the RC and the elements inside the TP. Observing that such local relation exists, it is concluded that the Head was base-generated inside the TP and raised to the Spec-CP (17a).
3.2.1 Scope interaction

The Head Raising Analysis predicts that the Head with an existential quantifier $\exists$ can be interpreted as having narrow scope with respect to the universal quantifier $\forall$ within the relative clause. Bakoitz ‘each’ has been described as the Basque inherently distributive quantifier (Etxeberria 2012), and it always requires a variable over which to get scope. In fact, when bakoitz ‘each’ does not have an element syntactically deeper in the structure over which to distribute, or more precisely, a variable over which to get scope, the sentence will result in ungrammaticality (Etxeberria 2001, 2002). Consider the following examples (18a-b):

(18) a. Ume bakoitzak sagar bat ikusi deu.
    kid each.ERG apple D.ind.ABS see aux.A3sE3s
    ‘Each kid saw an apple.’
    ✓ distributive; * collective

b. *Umiek sagar bakoitza ikusi deu.
    kid.D.ERG apple each.D.ABS see aux.A3sE3s
    ‘A kid saw each apple.’
    * distributive; * collective

In (18a) the universal quantifier bakoitz gets scope over a DP headed by an indefinite determiner, which constitutes a variable. In examples (18b), on the contrary, the universal quantifier does not take scope over any variable, and, therefore, the sentence is ungrammatical. Furthermore, as contrastive examples (19a-b) and (20a-b) show, the universal quantifier bakoitz ‘each’ must be higher in the structure than any existential quantifier due to its wide scope requirement. If bakoitz cannot c-command the existential quantifier, the derivation will crash.

(19) a. Mutil bakoitzak hiru sagar ikusi deuz.
    boy each.ERG three apple.ABS saw aux.A3sE3pl
    ‘Each kid saw three apples.’
    ✓ distributive; * collective

b. Neska bakoitzak lau mutileri erosio dotsoz.
    girl each.ERG four boy.DAT buy aux.A3sD3plE3pl
    ‘Each girl bought (them) from four boys.’
    ✓ distributive; * collective

(20) a. *Hiru mutilk sagar bakoitza ikusi dabe.
    three boy.ERG apple each.D.ABS see aux.A3pE3s
    ‘Three kids saw each apple.’
    * distributive; * collective
b. *Lau neskak mutil bakoitzari erosi dotsiez.
   four girl.ERG boy each.DAT buy aux.A3plb3se3pl
   ‘Four girls bought (them) from each boy.’
   * distributive; * collective

Bakoitz ‘each’ and an existential quantifier will be used as a test to show reconstruction effects in the relative clause construction in Bizkaiera. The Head Raising Analysis (17a) predicts reconstruction effects and therefore, to be possible to have an existential quantifier within the Head of a RC and bakoitz within the embedded DP subject, while the Head External Analysis (19b) does not. Consider the following sentences (21a-c).

(21) a. [[Mutil bakoitzak e, ekarri dauzen] sagar bidxekaz,] ein dot
   boy each.ERG Ø,INS bring aux.A3se3pl-c apple two.D.INSTR do aux.A3se1s
   pastela.
cake.D.ABS
   ‘I made the cake with the two apples that each kid brought.’
   √ distributive; * collective

b. [[Neska bakoitzak e, sagarrak erosi dotsozen] lau mutileri,] lau mutileri
   girl each.ERG Ø,DAT apple.D.pl.ABS buy aux.A3s03ple3pl-c four boy.D.DAT
   Euskadi gusteten jatzie.
   Euskad like aux.A3plb3s
   ‘The four boys that each girl bought an apple for like Euskadi.’
   √ distributive; * collective

c. [[Pertsona bakoitzak e, korridu ban] hiru txakurrekaz,] etorri nai.
person each.ERG Ø,SOC run aux.E3sa3s-c three dog.D.SOC come aux.A1s
   ‘I have come with the three dogs that each person ran with.’
   √ distributive; * collective

In the surface structure of these sentences (21a-d) the existential quantifier is in a position higher than the position of the universal quantifier bakoitz ‘each’, however, these sentences are grammatical. The grammaticality indicates the Head left a trace in its base-generated position when it raised to the Spec-CP position and therefore, the universal quantifier within the subject in Spec-TP is able to get scope over the existential quantifier. Thus, the results obtained from the scope interaction are supporting evidence to the claim that RCs in Bizkaiera use the Head raising strategy to construct relative clauses.

3.2.2 Idioms

Further evidence in favor of the Head raising strategy in Bizkaiera Basque RC comes from idiom chunk interpretation. Nominal parts of an idioms expression must be generated as the complement of the verb, and cannot be generated independently (Schachter 1973, Verngaud 1974). Consider the following simple sentences the idiom pipper ein ‘to cut’:
In (22a) a local structural relationship between the verb *ein* 'do' and the object *piper* 'pepper' exists, which allows for the idiom to be properly interpreted. In (22b), on the other hand, the object *piper* 'pepper' is not generated in a local relationship with the verb *ein* 'do' but independently, which does not allow the idiom expression to be possible.

Under the Head raising Analysis it would be possible to maintain the idiomatic interpretation of the idiom *piper ein* 'to cut' in a RC with the nominal expression as Head of the RC since the local relationship would be maintained through the trace of the Head. Nevertheless, under the Head External Analysis the idiomatic interpretation would not be possible in a RC with the nominal expression as the Head of the RC given that the nominal expression would be base-generated in its surface position and therefore, the required local relation between *piper* 'pepper' and the verb would not exist. Consider the following example (23):

(23)    
[(Eskolara [ei  ein  dozun] piperrak]  ez dotsu notarako  
school.ELAT  ei.ABS  do  aux.A3SE3S-C  pepper.ERG  no  aux.A3SD2SE3S  grade.BEN
konteko  
count.fut  
'The fact that you cut school will not affect your grade.'  
(Lit: The pepper that you have done will not count for your grade."

In (23), even though *piperrak* 'the peppers' is the Head of the relative clause, the sentence still conserves the idiomatic expression. This confirms that the idiom DP-Head of the RC has raised from the object position of the idiom verb and therefore, that Bizkaiera Basque uses the Head raising strategy to build RCs.

### 3.2.3 Pronoun binding

Pronoun binding is used as the last diagnostic to confirm what it has already been shown via the scope interaction and idioms: Bizkaiera RCs uses the Head raising strategy. As operators can only bind pronouns whose chains they c-command, the premise of this test is that if a pronoun in the Head of the RC can be bound by a universal quantifier within the DP in the embedded Spec-TP position, the relative clause must have a raising analysis (17a). On the contrary, if the Head of the RC originated in its surface position (17b), there would be no copy within the c-command domain of the quantifier and therefore, the quantifier would not bind the pronoun.
Consider sentences (24a-d), in which the possessive refers solely to the subject because the universal quantifier binds the variable that is within its c-command domain, that is, the possessive is interpreted in the scope of the universal.

(24)  
a. Mutil bakoitzak, bere, sagarra ekarri deu.  
boy each.ERG poss.3s apple.D.ABS bring aux.A3se3s  
‘Each kid brought his/her apple.’  

b. Neska guztidxek, euren, liburuek saldu dabez.  
girl all.ERG poss.3pl book.D.PL.ABS sell aux.A3ple3pl  
‘All girls have sold their books.’  

c. Mediku bakoitzak, bere, pazientieri esan dotso etortzeko.  
doctor each.ERG poss.3s patient.DAT say aux.A3sd3se3s to.come  
‘Each doctor has told his/her patient to come.’  

d. Pertsona guztidxek, euren, txakurrekaz korritzen dabe  
person all.ERG poss.3pl dog.D.PL.SOC run aux.A3se3pl  
‘All people run with their dogs.’  

Showing that a pronoun in the Head position of a RC can be interpreted as a variable bound by a universal quantifier inside the RC is straightforward in a Head Raising Analysis. If there were no operator-variable structure, we would have to infer that the Head was never in the scope domain of the universal quantifier and therefore, Bizkaiera uses the Head external strategy. Consider the following sentences (25a-d).

(25)  
a. [[Mutil bakoitzak $e_i$, ekarri dauen] bere sagarragaz] ein  
boy each.ERG $\varnothing$AABS bring aux.A3se3s-C poss.3s apple.D.INST do  
dot pastela.  
aux.A3se3s cake.D.ABS  
‘I made the cake with his/her apple that each kid brought.’  

b. Irakurritxe dekotez [[neska guztidxek $e_i$, saldu dabiezen]  
read have.A3ple1s girl all.ERG $\varnothing$AABS sell aux.A3ple3pl-C  
euren liburuek].  
poss.3pl book.D.PL.ABS  
‘I have read their books that every girl has sold.’  

c. [[Mediku bakoitzak $e_i$, etortzeko esan dotson] bere pazientieri]  
doctor each.ERG $\varnothing$AABS to.come say aux.A3sd3se3s-C poss.3s patient.D.DAT  
Urdaibai gusteten jatso.  
Urdaibai like aux.A3sd3s  
‘His/her patient that each doctor asked to come likes Urdaibai.’
d. [[Pertsona guztidxek e1 korridu dabiezen] euren txakurrekaz.]  

\[ \text{person all.erg \&\& run aux.a3se3pl-c poss.3pl dog.d.pl.soc} \]

jolastu dot.

\[ \text{play be.1s} \]

‘I have played with their dogs that every person ran with.’

In sentences (25a-d) the pronoun refers to the subject of the RC, which indicates that the bound variable pronoun in the Head of the RC forces reconstruction to a position where the bound variable is c-commanded by the universal quantifier. Thus, the results obtained from the pronoun binding in these sentences are also evidence of the Head raising strategy for building RCs in Bizkaiera Basque.

### 3.2.4 Conclusion

Evidence for the Head raising strategy in relative clause constructions of Bizkaiera Basque came from pronoun binding, scope interaction, and idioms, as all of them have shown reconstruction effects. First, the Head of the RC hosting an existential quantifier is interpreted as having narrow scope with respect to the universal quantifier *bakoitz* ‘each’ within the embedded clause and therefore, the sentence is grammatical. Second, when the object of an idiom occurs as the Head of the RC that contains the other part of the idiom, the idiomatic reading is still available. Finally, a bound variable pronoun in the Head of the RC forces reconstruction to a position where the bound variable is c-commanded by a universal quantifier.

### 4 Different types of Ps

This section shows that the distinct properties in the Ps of micro-dialect A and micro-dialect B is responsible for the variation observed in (6a-d) and (7a-d). Assuming that the P in Basque is a Probe and that as such it is able to target and Agree with the valued u-features that the P obtained by Agreeing with its DP complement (Řezáč 2008), in this paper it is proposed that the P in micro-dialect A is a Probe with unvalued D and unvalued \( \varphi \)-features (26a), whereas the P in micro-dialect B is a Probe with just an unvalued D feature (26b).

\[
(26) \quad \begin{align*}
\text{a. } & \quad P \left( \begin{array}{c} \delta \text{ Case} \\
\text{u\_D} \\
\text{u\_} \varphi \end{array} \right) \\
\text{b. } & \quad P \left( \begin{array}{c} \delta \text{ Case} \\
\text{u\_D} \end{array} \right)
\end{align*}
\]

Thus, in a RC construction in micro-dialect A (27a), the external D copies the Case and \( \varphi \)-features values of the internal P allowing it to value the \( \varphi \)-features of the Probe T/\( v \). In a RC construction in micro-dialect B (27b), however, the external D copies the Case value of the internal P not allowing it to value the \( \varphi \)-features of the Probe T/\( v \) and therefore, the derivation crashes.
The fact that the two micro-dialects differ in the status of their P is shown via Multiple Agree that occurs in micro-dialect A but it does not in micro-dialect B. In a long distance extraction, the intermediate auxiliary verb in RCs and the main auxiliary verb in Wh-question show agreement in number and person with the extracted PP in micro-dialect A, while they do not in micro-dialect B.

First, this section establishes that in both micro-dialects in a long distance extraction the extracted DP enters into an Agree relation with the intermediate v in a RC and with the highest v in a Wh-question and that in fact this Agree relation has a morphological consequence. Second, it shows that the same phenomenon takes place in a PP long distance extraction in micro-dialect A, while it does not in a PP long distance extraction in micro-dialect B.

4.1 DP extraction

Assuming that a relationship exists between Case and agreement (Chomsky 1999, 2000), if Multiple Agree occurs in Bizkaiera Basque, it is predicted that in a DP long distance extraction a higher v Agrees with the extracted DP. Consequently, both the v and the DP get their respective u-features valued: the $\varphi$-features in the v and the Case feature in the DP. Consider a relative construction (28a) and a Wh-question (28b) in Bizkaiera Basque, both built via a long distance extraction:

(28) a. [CP [TP [v CP [TP Neskiek ti hartu dauz]-ela] aitsitsek esan]  
   girl.D.ERG o.ABS take aux.A3ple3s-C grandfather.ERG say  
   ‘The apples that the grandfather said that the girl took are delicious.’
b. [CP Nortzuk, [C esan deuz [TP Ainhoak tₜ [vP tᵢ [CP tᵢ [C eingo dabielaj [TP tᵢ [vP tᵢ
who.ABS.pl say aux.A3ple3s Ainhoa.ERG do.FUT aux.A3SE3pl-C Ø.ERG
jatekoa tᵢ [tᵢ]]]]]]? food.D.ABS
‘Who did Ainhoa say is going to cook?’

In (28a), the Head of the RC sagarrak ‘apples’, which is in plural form, has raised cyclically to the Specifier position of the highest CP. The auxiliary dauz agrees with the Head as its plural number shows, thus this number agreement indicates that the Head sagarrak has Agreed with v during its cyclic-movement. The same can be concluded from (28b). The auxiliary verb deuz is agreeing with the plural Wh- Nortzuk as its absolutive third person plural agreement shows therefore, the highest v entered into an Agree relation with Nortzuk.

In conclusion, Bizkaiera Basque morphology demonstrates that a DP extracted out of an embedded clause enters into an Agree relation with a higher v during its successive cyclic movement. This Agree operation causes the DP to spell-out in absolutive Case, and, what is more important for the purpose of this study, the intermediate auxiliary to spell-out with the person and number features of the extracted DP.

4.2 PP extraction

As it has been shown in section 2.2, the variation between the two micro-dialects arises when the gap is an adjunct or an indirect object, and the external DP is in a subject or direct object position. RCs in such context are allowed in micro-dialect A (6a-d). The same configuration renders the structure ungrammatical in micro-dialect B (7a-d).

Confirmation for the claim that the P of micro-dialect A has an unvalued φ-features while the P of micro-dialect B does not is observed in a PP long distance extraction. In micro-dialect A the higher v gets its unvalued φ-features valued via Agree with the extracted PP, while in micro-dialect B it does not. Consider the sentences (29a-d), which are RCs in micro-dialect A with a gap within a [-Q] embedded clause.

(29) a. Mutilek eᵢ sagarra emon dotsiela aitsitsek esan
dauzen neskari jeusi ein dire.
’aitsitsek esan
dauzen neskari_jeusi ein dire.
‘The girls that the grandfather said that the boy gave the apple to fell.’
b. Mutilek eᵢ etorri dala Nereak esan dauzen txakurrekazᵢ
politxek dire.
’The dogs that Nerea said the boy came with are pretty.’
c. Jaidxe eᵢ eingo dauela lagunek esan dauzen hondartzatani
The beaches where the friends said that (he/she) will have the party are pretty.

The bars that he said the young people leave from are in Urdaibai.

Notice that in (29a-d) the intermediate auxiliary verb dauz shows agreement with the DP (third person plural) complement of the extracted PP (neskari ‘to the girls in (29a), txakurrekaz ‘with the dogs’ in (29b), hondartzatan ‘at the beaches’ in (29c) and tabernatatik ‘from the bars’ in (29d)). This person and number agreement indicates that the intermediate v in (29a-d) gets its unvalued ϕ-features valued by Agreeing with the extracted PP. Now consider examples (30a-e) in micro-dialect B:

(30) a. Mutilek e₁ sagarra emon dotsiela aitsitsek esan
dauen neskari₁ itsasoa gusteten jatsie.
party.d.erg φ.dat apple.d.abs give aux.a3sd3ple3s-c grandfather.erg say

‘The girls that the grandfather said that the boy gave the apple to like the sea.’

b. Mutile e₁ etorri dala Nerea esan dauen txakurrekaz₁
jolastu dot.
c. Jaidxe e₁ eingo dauela lagunek esan dauen hondartzatan₁
pasieten dot.
d. Gaztiek e₁ urteten dizela esan dauen tabernatatik₁
dator musikie.

For micro-dialect B, examples showing a matching effect are provided because this is the only way this micro-dialect allows relativization of PPs.
The music comes from the bars that (he) said that the young people leave from.

As opposed to the previous examples (29), in (30a-d) the auxiliary verb *dau* shows third person singular agreement even if the DP complement of the extracted PP has third person plural feature (*neskari* ‘to the girls in (30a), *txakurrekaz* ‘with the dogs’ in (30b), *hondartzatan* ‘at the beaches’ in (30c) and *tabernatatik* ‘from the bars’ in (34d)). I take this as evidence to suggest that the intermediate *v* in (30a-d) does not get its unvalued φ-features valued via Agree with the extracted PP because the P in this micro-dialect B lacks a φ-features.

Support for the existence of unvalued φ-features in micro-dialect A and the lack of them in micro-dialect B also comes from Wh-questions. In micro-dialect A extraction out of a [-Q] embedded clause causes the valued u-φ-features of the extracted PP to get copied into the higher v. In micro-dialect B, however, this does not occur. See the following examples in micro-dialect A (31a-d):

(31)  
(a) *Nortzuri* esan deuz aitsitsek *e* esan dotsatiela agur?  
who.pl.DAT say aux.A3plE3s grandfather.ERG φ.DAT say aux.A3sd3ple1s-C bye  
‘Who did the grandfather say that I said goodbye to?’

(b) *Nortzukaz* esan deuz mutilek *e* etorri dala medikue?  
what.pl.SOC say aux.A3plE3s boy.D.ERG φ.SOC come aux.A3s-C doctor  
‘Who did the boy say the doctor came with?’

(c) *Ze lekutan* esan deuz Mikelek *e* eingo dauela jaidxe?  
which place.d.pl.INE say aux.A3plE3s Mikel.ERG φ.INE do.fut aux.A3se3s-C party.D  
‘Which places did Mikel say he will have the party at?’

(d) *Ze lekutatik* esan deuz Andonik *e* datoza gaztiek?  
which place.d.pl.ALL say aux.A3plE3s Andoni.ERG φ.ELA come.a3plc.C young.d.pl.abs  
‘Which places did Andoni say the young people come from?’

In (31a-d), the higher auxiliary verb *deuz* (absolutive third person plural) shows third person plural agreement with the extracted PP (*Nortzuri* ‘to who’ in (31a), *Zertzukaz* ‘with what’ in (31b), *Ze lekutan* ‘in which places’ in (31c), and *Ze lekutatik* ‘from which places’ in (31d)). Thus, in the micro-dialect A the *v* in the matrix clause receives the φ-values from the extracted PP.

Now observe the following examples in micro-dialect B (32a-d):

(32)  
(a) *Nortzuri* esan deu aitsitsek *e* esan dotsatiela agur?  
whom.pl.DAT say aux.A3se3s grandfather.ERG φ.DAT say aux.A3sd3ple1s-C bye  
‘Who did the grandfather say that I said goodbye to?’

(b) *Nortzukaz* esan deu mutilek *e* etorri dala medikue?  
‘What did the boy say the doctor came with?’
In (32a-e), the higher auxiliary verb *deu* agrees with third person singular and not with the third person plural of the DP complement of the extracted PP (*Nortzuri* ‘to whom’ in (32a), *Zertzukaz* ‘with what’ in (32b), *Ze lekutan* ‘in which places’ in (32c) and *Ze lekutatik* ‘from which places’ in (32d)). Thus, in micro-dialect B the *v* in the matrix clause does not obtain the $\varphi$-values from the extracted PP since the PP in micro-dialect B lacks unvalued $\varphi$-features that can get valued via Agree with its DP complement.

### 4.3 Conclusion

It was confirmed that the extracted DP and the a higher *v* enter into an Agree relation by showing that in a DP long distance extraction the intermediate auxiliary verb in a RC and the main auxiliary verb in a Wh-question agrees in person and number with the extracted DP and that the DP is in absolutive Case. In addition, using the morphological consequence of this Agree relation as a test, it was shown that the status of P varies in the two micro-dialects A: in micro-dialect A Ps have unvalued $\varphi$-features, while in micro-dialect B they lack these features.

### 5 Conclusion

In this paper, first two micro-dialects within Bizkaiera Basque that are spoken by two different generations in Mundaka were identified: Micro-dialect A allows an RC with the external DP being in subject or direct object position and with an indirect object or adjunct gap, while micro-dialect B does not.

Second, in order to rule out that this micro-variation arises due to the different syntactic structure observed crosslinguistically, the reconstruction effects demonstrated that both micro-dialects use the Head raising strategy (33):

$$\text{(33)} \quad [\text{DP} \ [\text{CP} \ [\text{DP}, \ldots \text{t}, \ldots ]] \text{D}]$$

Finally, given that in a PP long distance extraction the extracted PP enters into an Agree relation with a higher *v* in micro-dialect A while it does not in micro-dialect B, it is confirmed that the difference between the two micro-dialects relies on the status of their respective P: in micro-dialect A the P is a Probe with unvalued D and $\varphi$-features (34a), whereas in micro-dialect B the P has an unvalued D feature but not unvalued $\varphi$-features (34b).
Thus, the existence of the unvalued $\varphi$-features in the P of micro-dialect A allows this micro-dialect to build RCs with the external DP being in subject or direct object position and with an indirect object or adjunct gap. The lack of unvalued $\varphi$-features in the P of micro-dialect B, on the other hand, causes the derivation of RC with the same configuration to crash.

5 References


Scandinavian Object Shift: The Interface between Syntax, Phonology, and Information Structure

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1 Introduction

In the Scandinavian languages, a full NP object follows a sentential adverb like the negation in the unmarked case (1a), whereas a weak pronominal object can move across such a sentential adverb (1b). This movement phenomenon is called Object Shift OS (Holmberg 1986, 1999).

(1) a. Jag kysste inte Marit.
   I kissed not Marit
   ‘I didn’t kiss Marit.’

   b. Jag målade den inte.
   I painted it not
   ‘I didn’t paint it.’

OS in the Scandinavian languages is dependent on verb movement (Holmberg’s Generalization, Holmberg 1986). That is, in simple tense forms (2a), the main verb moves to the second position; the object pronoun can move too. OS is obligatory in some Scandinavian varieties, but optional in others. In complex tense forms and embedded clauses, however, the main verb does not move. In complex tense forms (2b), the main verb does not move due to the presence of the Aux; the object pronoun cannot move and follow the Aux. In embedded clauses (2c), main verb movement does not occur; the object pronoun cannot move and follow the embedded subject.

(2) a. Jag målade <OKden> inte målade <OKden>.
   I painted it not it
   ‘I didn’t paint it’

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1 This work is to dedicate to the memory of Gösta Bruce. Without his great interest in and support for this work during my stay in Lund, autumn 2009, it could not appear. Many thanks to Vincent van Heuven, Anders Holmberg and Johan Rooryck for their invaluable advice, suggestions, help and support for this thesis work. Thanks also to Line Mikkelsen for her long-term interest in my work on Scandinavian Objest Shift. I also would like to thank the audience of BLS 40 for their helpful comments. I take all responsibility for any errors.

2 Abbreviations throughout this paper: Foc – a focus; H – high; L – low; Subj – a subject; S.Adv – a sentential adverb; Aux – an auxiliary verb; V\textsubscript{main} – a main verb in a main clause; V\textsubscript{part} – a past participle; V\textsubscript{enh} – a main verb in an embedded clause; Obj\textsubscript{NP} – a full NP object; Obj\textsubscript{pro} – an object pronoun; Obj\textsubscript{DAT} – a dative object; Obj\textsubscript{ACC} – an accusative (i.e. direct) object; Expl – an expletive; Rel\textsubscript{pro} – a relative pronoun.

3 In this work, the terminology Object Shift refers to weak pronoun shift only. In the discussions below, I deal with only unmarked cases.
b. Jag har <*den> inte målat  <OKden>.
I have it not painted it
‘I haven’t painted it.’

c. Jag sa att jag<*honom> inte målade  <OKhonom>.
I said that I him not portrayed him
‘I said that I didn’t portray him.’

No movement phenomenon other than OS in which movement of a sentential element is dependent on that of another sentential element has been found. Due to this property, OS has long been one of the most controversial issues in generative syntax (Diesing 1992, 1997; Holmberg and Platzack 1995; Holmberg 1999; Chomsky 2001; Sells 2001; Vikner 2001; Josefsson 2003; Fox and Pesetsky 2005; Erteschik-Shir 2005a,b; Broekhuis 2008; Mikkelsen 2011; among others).

There is much literature on the intonational properties of the Scandinavian languages (Bruce 1977, 1999, 2005, 2007, Bruce and Gårding 1978, Gårding 1998 for Swedish; Kristoffersen 2000, 2007 for Norwegian; Grønnum 1998, Basbøll 2005 for Danish; Árnason 1999, 2011, Gussmann 2002, Dehé 2010 for Icelandic; Árnason 1999, 2011 for Faroese; Kristoffersen 2008 for Övdalian). In this paper, I show, with experimental and statistical data collected from the Scandinavian varieties investigated, that the OS construction such as simple tense forms (2a) has intonational properties different from the non-OS construction such as complex tense forms and embedded clauses (2b-c). That is, downstep (cf. Gussenhoven 2004) occurs in the former but does not occur in the latter. I also present a new system that accounts for not only the facts on OS but also the interaction between the grammatical components, syntax, phonology and information structure.

This paper is organized as follows. Section 2 introduces the Swedish intonational system (Bruce 1977) and presents a prediction on the intonational properties of Swedish OS on the basis of it. Section 3 introduces an experiment to observe the intonational properties of the constructions relevant to Swedish OS and the result. A cross-Scandinavian statistical data is also presented. Section 4 presents a new system that accounts for not only the facts on OS but also the interaction between the grammatical components. Section 5 briefly concludes this paper.

2 The Swedish Intonational System

In Swedish, the focus of a sentence is realized by a focal H contour, which is added after the pitch gesture of the main syllable of a focused word (Bruce 1977). In (3), the main verb lämna is (contrastively) focused. A focal accent is located on the first syllable läm- of that main verb.\(^4\)

\(^4\) Braces indicate the range of the pitch gesture of a relevant accented syllable, i.e. the range of H*L from the H on which the accent occurs to the following L, here.
focal H contains an unaccented quantifier nära and also the first syllable of an adjective långa, i.e. lån-, the next accentable syllable after the main verb. The pitch peak occurs on that first syllable of the adjective. The pitch then falls on that adjective and continues to be low until the end of the sentence.

(3) Man vill LÄMNA några långa nunnor.  
man wants leave some long nuns  
‘One wants to leave some tall nuns.’

A prediction on the intonational properties of the OS construction is illustrated in (4). In the unmarked case of the OS construction, the focus of a sentence is carried by a main verb, i.e. målade below; a focal accent occurs on the first syllable må- of that main verb. The focal H contour should occur immediately after that accented first syllable.\footnote{The final syllable -de of the main verb is dropped in almost all cases. Thus hereafter, I notate it by attaching it in parentheses to the second syllable as in -la(de) in all notations.} The focal H should contain a shifted object pronoun and also the first syllable of the negation inte, i.e. in-, the next accentable syllable after the main verb. The pitch peak should occur on that first syllable of the negation.

(4) Jag målade den inte.  
I painted it not  
‘I didn’t paint it.’
3 The Intonational Properties of (Swedish) Object Shift

3.1 Experiment

I introduce an experiment to observe the intonational properties of the constructions relevant to OS. The same method applies to all the Scandinavian languages/dialects investigated: Swedish (East, West, North, South, Finland Swedish, Dalecarlian, and Övdalian); Norwegian (East and West); Danish (East and South); Icelandic; and Faroese. A test sentence contains either a monosyllabic object pronoun (e.g. den ‘it’) or a disyllabic object pronoun (e.g. honom ‘him’).

With the verb meaning ‘paint/portray’, e.g. (Swe.) måla, which is etymologically shared by all the Scandinavian languages, the test sentences were systematically translated into the Scandinavian varieties investigated aside from minor morphological differences. In this paper, I present data on Swedish OS as a representative of the Scandinavian languages.

On the basis of the literature on information structure (e.g. Lambrecht 1994, Vilkuna 1995, Kiss 1998), appropriate contexts were built with a question and the answer, the latter of which corresponds to each target construction. Specifically, see Appendix: A – polarity-focus of a simple tense form with a monosyllabic object pronoun; B – polarity-focus of a simple tense form with a disyllabic object pronoun; C – Verb Topicalization, a contrastive verb-focus construction in which the past participle moves to sentence-initial position and a (disyllabic) object pronoun also moves, which was added due to the theoretical significance related to this construction (Holmberg 1999, Chomsky 2001); D – polarity-focus of a complex tense form with a monosyllabic object pronoun; E – polarity-focus of a complex tense form with a disyllabic object pronoun; F – contrastive argument-focus of a simple tense form with a focused object pronoun; and G – argument-focus of an embedded clause. In almost all the Scandinavian varieties, the object pronoun moves in A, B and C, and does not move in D, E, F and G, in the unmarked case. In section 3.2, I present the data on simple tense forms, complex tense forms and embedded clauses for the limit of pages. A cross-Scandinavian statistical data of all the constructions is presented in section 3.3.

The test sentences were presented to informants in a five-page booklet, in which the same sentences occurred in a different random order on each page. They read all five pages; consequently, each sentence was recorded five times. The conditions (instructions) under which they read the test sentences are as follows: i) to understand the contexts of each question-answer pair; ii) to read each question-answer pair in appropriately rapid speech, in such a way as they speak in a real-life conversation; and iii) to read all the test sentences even if they felt some of them to be odd and report their native judgments in a questionnaire. The recordings were made one by one, typically in a small lecture room, by the author herself using a laptop with Praat software (Boersma and Weenink 1996) and a microphone. After informants finished reading one page, they took a short break. This procedure was repeated five times. For the Scandinavian
varieties that were not recorded by the author herself, informants were asked to record their voice and send the sound file to the author by e-mail attachment. The age of the informants ranges from the 20es to the 80es. The total number of collected tokens of question-answer pairs amounts to 3200.

A note on the status of collected data is needed. Depending on the speaker’s intention, it is possible to put prominence on any of the sentential constituents. However, informants were asked to understand, e.g. did you paint the wall? – no, I didn’t paint it, as polarity-focus, before they read it. As long as the contexts are understood by informants in advance, this paper assumes that informants’ reading activity, thus all the question-answer pair tokens collected, represent the unmarked case for each of the informants.

3.2 Results

The pitch contours of the OS construction are presented in (5). The pitch peak occurs on the first syllable må- of the main verb målade. The pitch lowers on the shifted object pronoun den. The pitch does not rise again on the first syllable in- of the negation inte. That is, contrary to the prediction illustrated in (4), the fundamental frequency F0 of the first syllable of the negation, i.e. in-, is lower than the F0 of the main syllable of a focused main verb in the OS construction of simple tense forms. This indicates that downstep (cf, Gussenhoven 2004) occurs in the OS construction.7

(5) Simple tense forms:
‘(Did you paint the wall?’ – No.) I didn’t paint it.’

```
(0.915 Hz)
0 200 300
East Swe. Male
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Next, the pitch contours of the non-OS construction are presented in (6-7). In complex tense forms (6), the pitch peak occurs mostly on the first syllable in- of the negation. In embedded clauses (7), the pitch peak occurs on the embedded main verb or on the unshifted object pronoun. (7) illustrates the former case.

7 In section 3.3, I present a more detailed definition of the term downstep in this paper.
Complex tense forms:
(Har du målat väggen? – Nej.) Jag har inte målat den.
(Have you painted the wall? – No.) I haven’t painted it.’

Embedded clauses:
(Vad sa du? –) Jag sa att jag inte målade honom.
(What did you say? –) I said that I didn’t portray him.’

The point here is that the pitch peak occurs on a sentential/clausal element that is located somewhere after the element which an object pronoun cannot follow directly, i.e. on the negation located after the Aux har in the complex tense form (6) and on the main verb (or on the in-situ object pronoun) located after the embedded subject in the embedded clause (7). In both cases, the final pitch peak is most likely to occur on the in-situ main verb. This indicates that downstep does not occur in the non-OS construction.

3.3 Cross-Scandinavian Statistical Data

In this section I present a cross-Scandinavian statistical data on downstep (cf. Gussenhoven 2004)
in the (non-)OS construction. In this paper, I use the term **downstep** for the (expected) lowering in pitch between two designated points in time during the course of a spoken utterance. The first key pitch point $P_1$ occurs relatively early in the utterance, whereas the second key pitch point $P_2$ follows towards the end of the utterance. Downstep is defined as the pitch difference between $P_1$ and $P_2$ expressed in **semitones** (st). I will refer to that pitch difference as the **downstep size**. When the pitch actually falls, the value of the downstep size will be positive. The higher the value is, the larger the downstep size is. The negative value indicates that downstep does not occur in a sentence: upstep in fact occurs. The lower the value is, the higher the size of upstep/non-downstep is.

For the computation of the downstep size, all the test sentences were articulated by every syllable in advance, and two key pitch points were taken. For the OS construction such as simple tense forms, the first point is on the accented syllable of the main verb, and the second point is on the negation, i.e. the next acceptable word after the main verb. The decrement at which the F0 lowers from the main verb to the negation was computed. For the non-OS construction such as complex tense forms and embedded clauses, the first point is on the Aux/embedded subject, which an object pronoun cannot follow directly. The second point was determined by identifying the syllable with the highest pitch value among the syllables that are located after the Aux/embedded subject. The decrement at which the F0 lowers from the Aux/embedded subject to an identified syllable was computed.

A semitone (st), which expresses the downstep size in this paper, is one-twelfth of an octave, which is a doubling of the F0. The interval between any two key pitch points $P_1$ and $P_2$ in Hz was computed by the following formula: $12 * \log(P_1/P_2) / \log(2)$. Since the time interval between $P_1$ and $P_2$ normally does not exceed the duration of one second in my data, I defined a proper instance of downstep as a pitch decrement between $P_1$ and $P_2$ larger than 2 semitones. This indicates that the difference in semitones between $P_1$ and $P_2$ must be larger than 2 to say that downstep actually occurs in a sentence.

There are two dependent variables which characterize the extent of downstep. One is the **incidence of downstep**. This variable expresses what percentage of the utterances recorded for a given sentence type in a given Scandinavian variety shows downstep, i.e. the percentage at which the difference in semitones between $P_1$ and $P_2$ is actually larger than 2. The other variable is the **mean size of the pitch decrement** between $P_1$ and $P_2$, irrespective of whether the pitch decrement qualifies as a downstep or not (i.e. regardless of whether the semitone between two points is larger than 2 or not). The incidence of downstep and the mean size of the pitch decrement were computed by choosing two representative male and two representative female

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8 I am indebted to Vincent van Heuven for the computation of downstep and the presentation of the statistical data in this section.

9 Without multiplication by 12, this formula computes the pitch interval in octaves.

10 This estimate is based on the formula, $D = -11 / t + 1.5$, to compute the declination $D$ in semitones per second for utterances shorter than 5 seconds, where $t$ is the duration of the utterance (*t* Hart, Collier and Cohen, 1990, Rietveld and Van Heuven, 2009).
speakers in each of the Scandinavian varieties investigated, and processed with the SPSS statistical software.

(8) is a graph of the comparison of the mean downstep size and the actual incidence of downsteps in between the OS construction, A, B and C (upper panel) and all the other construction types (lower panel) in all the Scandinavian languages investigated. In all the Scandinavian varieties in general, the percentage at which downstep actually occurs, i.e. the percentage at which the difference in semitones is actually larger than 2, which is illustrated by light bars, is substantially higher in the OS construction, A, B and C (upper panel) than in the other construction types (lower panel). Regarding the mean downstep size, which is illustrated by dark bars, that of the OS construction has a positive value in almost all the Scandinavian varieties (except in East Danish) as illustrated in the upper panel. The mean downstep size of the other construction types has a negative value in all the varieties as illustrated in the lower panel, which indicates the absence of downstep in the non-OS construction.

(8) Comparison of the mean downstep size (dark bars) and the actual incidence of downsteps (light bars) in between the OS construction (upper panel) and all the other construction types together (lower panel)\textsuperscript{11}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{comparison_graph}
\caption{Comparison of the mean downstep size (dark bars) and the actual incidence of downsteps (light bars) in between the OS construction (upper panel) and all the other construction types together (lower panel).}
\end{figure}

\textsuperscript{11} In graph (8) the downstep size is multiplied by a factor 10 in order to obtain bars of approximately the same height as the percentages of downsteps realized (between 0 and 75).
In sum, downstep is more likely to occur in the OS construction but less likely to occur in the other construction types (in which upstep is likely to occur).

4 The Interaction between Syntax, Intonation and Information Structure

I propose a new system that accounts for the facts on OS as well as the interaction between the grammatical components in general. The basic idea is that in theorizing the interaction between syntax, information structure and intonation, only the focal point and the highest pitch peak point need to be taken into account, whereas the locus of an accent is not primary: the highest pitch peak point always points to the focal point on it or quite near it, whereas the stressed syllable of a word is accented regardless of whether that word carries the focus of a sentence or not. The relation between the pitch peak point and the focal point is stated as the following principle:

(9) The highest pitch peak point mostly coincides with the focal point.\(^{12}\)

There is much literature on information structure (in a wide sense): Mathesius (1929); Halliday (1967); Firbas (1974); Chomsky (1970); Jackendoff (1972); Gundel (1974); Chafe (1976); Kuno (1976); Li and Thompson (1976); Dik (1978); Givón (1979); Selkirk (1984, 1995); Vallduví (1990); Vallduví and Engdahl (1996); Lambrech (1994); Rizzi (1997); Zubizarreta (1998); Bresnan (2001); Steube (2004, eds.); Hengeveld and Mackenzie (2006); Schwabe and Winkler (2007, eds.); among others. In this work, I define information structure as follows:

(10) Information Structure:

The discourse concepts that mediate between the grammatical components such as syntax and phonology to express the information flow of a sentence in a language at issue

The basic concept here is the focus, the center of a given discourse, which plays a central role in the system proposed below.\(^{13}\) The proposed system has a focal pointer fp, ‘\(\ddagger\)’, which is the indicator of the change in the information flow of a sentence. An illustration is given in (11). The word order goes on from the left to the right. The fp indicates the location of a focus, Foc. The pitch peak mostly coincides with that focal point. After that pitch peak, downstep occurs in the position(s) following that focal point.

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\(^{12}\) This principle is compatible with the widely claimed view in the literature: a focused constituent must contain the word most prominent in a sentence. See Chomsky and Halle (1968), Schmerling (1976), Gussenhoven (1984), Selkirk (1984, 1995), Rochemont (1986), Cinque (1993), Zubizarreta (1998), Kahnemuyipour (2009), among others, for the theory of sentence accentuation.

\(^{13}\) Following Lambrecht (1994), I assume i) that any sentence must have a focus and can have one and only one focus, and ii) that when a phrase is focused, the unaccented word(s) is (are) contained in a focal domain. Thus, in argument-focus, (what do you want? –) I want [a banana], the phrase [a banana] is focused and comprises a focal domain (indicated by brackets) in which the unstressed indefinite article is contained.
The interaction between syntax, intonation and information structure:

\[ \text{H} \]

\[ \text{L} \]

A cross-linguistic prediction from the proposed system is that the farther the fp moves from an unmarked position, the more an unmarked intonation pattern is likely to change, and the more an unmarked syntactic word order is likely to be affected. Example (12) is an illustration of the unmarked case of SVO languages. The syntactic word order is SVO from the left to the right. It is a standard claim that in transitive constructions, the focus is carried by a (full NP) object in the unmarked case (Gundel 1988). The fp is normally located on the object (NP). The pitch rises towards the object; the pitch peak occurs on one of the phrasal elements that compose the object. After that pitch peak, downstep occurs in the position(s) following that focal point.

(12) The unmarked case of SVO languages:

\[ \text{Subj} \rightarrow \text{V}_{\text{main}} \rightarrow \text{Obj}_{\text{NP}} \rightarrow \text{L} \]

In this language type, the focus of a sentence and the final pitch peak occur near the end of the sentence. Therefore, the prediction is that the farther the fp moves from the unmarked object position to the left, the unmarked intonation pattern is more likely to change; the unmarked syntactic word order is more likely to be affected too. (13) illustrates the interaction between the changes of the focal point, the pitch peak point and the syntactic word order in SVO languages.
(13) The interaction between the changes of the focal point, the pitch peak point and the syntactic word order in SVO languages:

*Diagram showing word order and intonation patterns.*

With this system, I firstly account for the facts on OS. Unmarked cases are illustrated in (14a). The fp is located on the sentence-final (full NP) object, on which the focal H also occurs. The intonation pattern is unmarked, since the pitch rises towards the object. The word order is not affected either. Examples are given in (14b).

(14) a. Unmarked cases:

*Diagram showing word order and intonation patterns.*

b. Jag kysste Anna.¹⁵ ‘I kissed Anna.’
   Jag har sett *filmen*. ‘I have seen the movie.’
   Jag sa att jag kysste *Anna*. ‘I said that I kissed Anna.’

In the non-OS construction such as complex tense forms and embedded clauses (15a), the fp moves from the object position to a past participle/embedded main verb which normally remains in situ. The intonation pattern is still unmarked, as downstep does not occur before that main verb. The word order is not affected either. Some examples are given in (15b).

¹⁴ This case includes that of a focused object pronoun in situ.
¹⁵ The locus of the (information/contrastive) focus of a sentence is indicated by italics.
In the OS construction such as simple tense forms (16a), however, the fp moves from the object position to the second position (and even to sentence-initial position in the case of Verb Topicalization). The intonation pattern is marked, since the pitch peak occurs on the main verb and downstep starts immediately after it. The word order is also affected, as illustrated by the presence of OS, in addition to verb movement. Examples are given in (16b).\(^{16}\)

\(^{16}\) See Hosono (2013) for a hypothesis on Scandinavian OS: the object pronoun moves to cause downstep. With that hypothesis, Holmberg's Generalization is accounted for as follows. When main verb movement takes place, an object pronoun moves and causes downstep to eliminate a focal effect on the sentential element(s) after the main verb. In the environments in which downstep must not occur, i.e. in the constructions where the final pitch peak occurs on the (in-situ) main verb, OS does not occur either. Hosono also presents a new generalization on Scandinavian OS from the intonational perspective: the earlier the pitch gesture occurs, the more likely is OS to occur; the more delayed the pitch gesture is, the more likely is OS to be absent. It is argued that OS is a gradient phenomenon rather than a binary/dichotomous property in the Scandinavian languages. See Hosono for a thorough investigation of the intonational properties of Scandinavian OS.
b. Jag kysste henne inte. ‘I didn’t kiss her.’
Jag köpte den inte. ‘I didn’t buy it.’
Kysst har jag henne inte. ‘I didn’t KISS her.’

Here, I also account for focalization of object arguments in English; see (17). The fp moves from the object position to sentence-initial position. The intonation pattern is marked: downstep occurs immediately after the focal point in sentence-initial position. The word order is also likely to be affected, as illustrated by the presence of wh-movement (17a) and focus fronting (17b).

(17)  a. What did you do yesterday?
   b. THAT ARTICLE, I didn’t read today.
   c. 

![Diagram]

Example (18) is an illustration of the unmarked case of SOV languages. The syntactic word order is SOV from the left to the right. Since the focus is carried by a (full NP) object in the unmarked case, the fp is normally located on it. The pitch rises towards the object; the pitch peak occurs on one of the phrasal elements that compose the object. After that pitch peak, downstep occurs in the position(s) following that focal point.

(18) The unmarked case of SOV languages:

![Diagram]

In this language type, the focus of a sentence and the final pitch peak occur on the position immediately preceding a verb. The prediction is that the farther the fp moves from the unmarked object position either to the left or to the right, the more the unmarked intonation
pattern is likely to change, and the more the unmarked word order is likely to be affected too. The interaction between the changes of the focal point, the pitch peak point and the syntactic word order in SOV languages is illustrated in (19).

(19) The interaction between the changes of the focal point, the pitch peak point and the syntactic word order in SOV languages:

The prediction is confirmed by verb-focus and subject-focus in Japanese. In verb-focus (20a), the fp moves to the left of the object position. The intonation pattern is marked, since the pitch peak occurs on that focal point and downstep occurs immediately after it. The word order is affected too, as illustrated by the presence of verb fronting. In subject-focus (20b), the fp moves to the right of the object (, even across the main verb). The intonation pattern is marked, as downstep does not occur up to the focal point in sentence-final position. The word order is also affected as illustrated by the presence of subject postposing.

(20) a. watashi TABE-MASHI-TA ano keiki (totteoka-zuni). [Jap.]
   I eat-HON-PAST that cake (keep-without)
   ‘I ATE that cake (, not kept it).’

b. keiki-o kat-ta-no-wa WATASHI-desu (, haha-de-naku).
   cake-ACC buy-PAST-GEN-TOP I-be mother-be-not
   ‘I bought the cake/It’s ME who bought the cake (, not (my) mother).’
We find some cross-linguistic patterns. The first case is that the fp and the pitch peak move, but the word order is not affected. This case is illustrated by subject-focus in English; see (21). The fp moves from the object position to sentence-initial position. The intonation pattern is marked: downstep occurs immediately after that focal point. The word order, however, is not affected, as shown by the absence of movement.

(21)  

a. *JOHN* (, not *Mary,* ) likes it.

b.  

The second case is that the fp and the pitch peak do not move, but the word order is affected. This case is illustrated by scrambling in German (22). In broad-focus (22a), the fp is located on the position that immediately precedes the (past participle) main verb. The intonation pattern is unmarked, since the pitch peak occurs on the immediately preverbal focal point. The word order is also not affected. In contrastive argument-focus (22b) too, the fp is located on the position that immediately precedes the main verb. The intonation pattern is unmarked too, as the pitch rises to the immediately preverbal focal point. The word order, however, is affected as illustrated by movement of the direct object *das Buch* due to its given status.

(22)  

a. *Hans* hat dem *Kind* *das BUCH* gegeben.  
   *Hans*-NOM has the-DAT child the-ACC book given  
   ‘Hans gave the child the book.’
b. Hans hat das Buch dem KIND gegeben.
   Hans-NOM has the-ACC book the-DAT child given
   ‘Hans gave the book to the CHILD (, not to her MOTHER).’

c.

```
(22a) Subj Obj_{DAT} Obj_{ACC} V_{part} L
(22b) Subj Obj_{ACC} Obj_{DAT} Obj_{ACC} V_{part}
```

Finally, I mention individual cases in some languages. French is an SVO language that does not allow a preverbal focus; thus, it often employs the ‘cleft construction’ strategy (Lambrecht 2001). In broad-focus (23a), the fp is located on the (full NP) object. The intonation pattern is unmarked, since the pitch peak occurs on that sentence-final object position. The word order is also not affected. In subject-focus, the fp moves to the left of the object position, but it cannot occur on the preverbal subject in sentence-initial position: *

\textit{Jean l’aime} (Jean it likes ‘Jean likes it/It’s Jean who likes it’). Therefore, the word order is affected, and the sentence form is totally changed to a cleft construction as illustrated in (23b). The intonation pattern is also marked, as downstep occurs immediately after the focal point, i.e. the subject \textit{Jean}, which appears after the Aux.

(23) a. Broad-focus:
   Jean aime \textit{Marie}. 
   Jean likes Marie
   ‘Jean likes Marie.’

```
Subj V_{main} Obj_{NP} L
```

[Fre.]
b. Subject-focus:

C'est JEAN qui l'aime.

It's Jean who it likes

'It is JEAN who likes it./JEAN likes it.'

Hungarian is an SVO language that has different positions of a focal accent between broad-focus and (object) argument-focus, contrary to the so-called ‘focus-projection’ languages such as English (Halliday 1967, Chomsky 1970, Selkirk 1995). In Hungarian, the focal accent occurs on the main verb in broad-focus but occurs on the immediately preverbal position in (object) argument-focus (and in all other contexts) (Szendrői 2003). Specifically, in broad-focus (24a), the fp is located on the main verb kinézett. The intonation pattern is unmarked, since the pitch peak occurs on that main verb too. The word order is also not affected. In argument-focus (and in other contexts in general) (24b), the fp moves to the immediately preverbal position. The intonation pattern is marked, since the pitch peak occurs on that immediately preverbal focal point. The word order is also likely to be affected: a focused sentential element, i.e. the direct object kalapot here, moves to the immediately preverbal position.

(24) a. Broad-focus:

Mari kINÉZETF magának egy kalapot. [Hun.]
Mari PRT-spotted herself-DAT a hat-ACC

'(What did Mary do?) Mari chose a hat for herself.'

b. Other contexts:

Mari egy KALAPOT nézett ki.
Mari a hat-ACC spotted PRT

'(What did Mari choose?) Mari chose a hat.'

(Szendrői 2003:72-73, (57-58))
5 Conclusions

In this paper, I have showed that in the Scandinavian languages, the OS construction has intonational properties different from the non-OS construction: downstep occurs in the former but does not occur in the latter. This fact is confirmed by the statistical data that was analyzed on the basis of the experimental data collected from almost all the Scandinavian varieties investigated. I have then presented a new system that accounts for not only the facts on OS but also the interaction between the grammatical components in general. The basic idea is that in theorizing the interaction between syntax, phonology and information structure, only the focal point and the highest pitch peak point need to be taken into account. The proposed system has the fp, $\tilde{\rho}$, which is the indicator of the change in the information flow of a sentence. When it moves, the pitch peak moves too. A cross-linguistic prediction from this system is that the farther the fp moves from an unmarked position, the more an unmarked intonation pattern is likely to change, and the more an unmarked syntactic word order is likely to be affected. This prediction is confirmed by many linguistic facts observed in various languages.

6 References


Appendix: Test sentences for Swedish informants

   ‘Did you paint the wall? – No, I didn’t paint it.’

   ‘Did you portray Jan? – No, I didn’t portray him.’

C. Har du målat Jan?
   ‘Have you portrayed Jan?’
   – Målade jag honom inte. Men jag har tagit foto av honom.
      ‘I haven’t PORTRAYED him. But I have taken photos of him.’

   ‘Have you painted the wall? – No, I haven’t painted it.’

   ‘Have you portrayed Jan? – No, I haven’t portrayed him.’

   ‘Did you portray Jan? – No, I didn’t portray HIM. But I portrayed Mats.’

   ‘What did you say? – I said that I didn’t portray him.’
1 Introduction

Since Cheng and Sybesma (1998, 1999), the syntax, the headedness of measure words, and the semantic distinction of them (i.e., “classifiers” vs. “massifiers”) have aroused great discussion. The measure words at issue refer to words that serve as a unit or measurement of nouns for counting purposes. According to Cheng and Sybesma (1998), measure words can be distinguished semantically with respect to the noun that they are associated with. Count nouns refer to entities “which present themselves naturally in discrete, countable units,” and mass nouns are “substances which do not present themselves” in specific units. Based on this, Chen and Sybesma divide measure words into two types: measure words like (1a) are referred as “classifier,” and those like (1b) are referred as “massifier.”

(1) a. liang ben shu
   two CL book
   ‘two books’

   b. san xiang shu
   three CL.box book
   ‘three boxes of books’

Various structures have been proposed to account for Chinese nominal expressions containing a classifier/massifier: a unified left-branching structure (e.g., Huang 1982, Tang 1990, Hsieh 2008, and Her 2012, as in (2)), a unified right-branching structure (e.g., Tang 1990, Cheng and Sybesma 1999, Borer 2005, Huang, Li and Li 2009, as in (3)), and non-unified accounts that usually propose a structure like (2) for “massifier” and a structure like (3) for “classifier” (e.g., Zhang 2011, 2013, X. Li 2011, and X. Li and Rothstein 2012). In this paper, unlike the previous syntactic analyses, I argue for a different and simplified right-branching structure that can account for the syntax of the measure words in question.

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1 I benefit a lot from Steven Franks, Yoshihisa Kitagawa, and Jen Ting for discussions and comments on the earlier drafts of this paper. I also thank Peter Jenks, Line Mikkelsen, and the audience of BLS 40 for their insightful comments and suggestions. Any errors and inadequacies are exclusively my own.

2 The abbreviations of the glosses used in examples are: CL, classifier, measure word; DE, marker of modifiers of nominal expressions; PERF, perfective aspect marker; EXP, experienced aspect marker.
Before I present my analysis, there are facts that suggest the uniformity of massifiers and classifiers from a syntactic perspective. To begin, it is well known that different types of measure words (i.e., classifiers and massifiers) cannot co-occur. The examples in (4) demonstrate this point. Such examples suggest that these measure words compete for the same syntactic position.

(4)  

a.* liang  ben  xiang  shu  
two   CL   box book

b.* liang  xiang  ben  shu  
two   CL.box  CL  book

Moreover, it has been pointed out in Tang (2005), Hsiech (2008), Her (2012) and Shi (2013) that both classifiers and massifiers are compatible with the so-called “de-insertion,” which was originally argued by Cheng and Sybesma (19999) as a syntactic difference between massifiers and classifiers.³

³ Following Tang (1990), I assume that the sequence of number-classifier-de (e.g., (i)) is analyzed as modifier phrase (ModP) on a par with other modifier of nominals (e.g., adjectives and relative clauses), which is different from the typical classifier structure that is discussed in this paper (e.g., (ii)), i.e., UnitP proposed in this study.
Zhang (2011, 2013) and Her (2012) also show that both classifiers and massifiers can license NP ellipsis. The examples in (6) demonstrate this point.

(6) a. Ta you san ben shu, wo you si ben shu.  
He have three CL book I have four CL  
‘He has three books, I have four.’

b. Ta you san xiang shu, wo you si xiang shu.  
He have three CL.box book I have four CL.box  
‘He has three boxes of books, I have four boxes.’

Therefore, although I acknowledge that there are several semantic differences that could be identified among the measure words at issue, such as the count-mass distinction argued in Cheng and Sybesma (1998, 1999), or interpretations of container, partitive, collective, and individuating functions that are discussed in Zhang (2011, 2013), I argue that a simplified unified right-branching structure can explain the syntax and account for the same range of data reported in the literature. As shown in (7), my proposal presents the measure words at issue as the head of a Unit Phrase (hence UnitP) dominating noun phrase (hence NP) and taking numeral phrase (hence NumP) as its specifier.

(7) Proposal: Unit Phrase

```
Proposal: Unit Phrase

UnitP
  NumP
    san three
  Unit'
    Unit ge xuesheng
    CL x student
    CL.group

```

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Structures similar to (7) can be found in non-unified accounts, such as Cheng and Sybesma (1998), Zhang (2011, 2013), X. Li (2011), and X. Li and Rothstein (2012). Independently, Zhang (2013) also proposes the same UnitP structure but only proposes it for measure words that express individual or individuating interpretation. However, I depart from these proposals and argue that this structure (7) alone can explain the syntactic behaviors of measure words. More importantly, unlike the previous analyses, I argue that the occurrence of Unit head changes the semantic core of the whole nominal expression, that the projection UnitP is independent of and dominates the complement NP, and that modification of adjectives within a nominal expression has to respect this structure.

In the following sections, I discuss why I render previous proposals using left-branching structures not plausible, and why the current proposed structure (7) can account for the same set of data in a simpler way.

2 Problems in Left-Branching Proposals

In this section, I show that a left-branching structure is neither plausible nor required, and therefore, non-unified accounts are not tenable. In turn, I will argue for a different and simplified right-branching structure that accounts for the syntax of measure words in question.

Following X. Li (2011), X. Li and Rothstein (2012) claim that a “measure” vs. “counting” difference corresponds to two different syntactic structures of measure words. They argue that the measure reading of measure words is expressed by a left-branching structure (i.e., (8a)), and the counting reading is expressed by a right-branching structure (i.e., (8b)).

(8) a. Measure reading

```
(8) a. Measure reading

\[
\begin{array}{c}
\text{CIP} \\
\downarrow \\
\text{CIP'} \\
\downarrow \\
\text{Num} \quad \text{Cl}_{\text{measure}} \\
\text{san ‘three’} \quad \text{ping ‘bottle’} \quad \text{shui ‘water’}
\end{array}
\]
```

b. Counting reading

```
(8) b. Counting reading

\[
\begin{array}{c}
\text{CIP} \\
\downarrow \\
\text{Num} \\
\text{san ‘three’} \\
\downarrow \\
\text{Cl}_{\text{counting}} \\
\text{ping ‘bottles’} \\
\downarrow \\
\text{NP} \\
\text{shui ‘water’}
\end{array}
\]"
X. Li and Rothstein (2012: 709-710) propose that one classifier may carry either a measure reading or a counting reading. When it expresses a measure reading, the classifier and the numeral form “a complex classifier” that “combines” with NP through a left-branching structure (see also Tang 1990). Therefore, the numeral within the complex classifier is obligatory (e.g., (9a)). However, when a classifier expresses a counting reading, it heads a right-branching structure taking NP as its complement and the numeral as an optional modifier, e.g., (9b).

(9) a. Measure reading
   Ta-de jiuliang shi *(yi) ping hong-jiu.
   his drinking-ability be one CL.bottle red-wine
   ‘His drinking-ability is one bottle of red wine.’

b. Counting reading
   Ta zuo-shou na le (yi) ping hong-jiu.
   he left-hand take PERF one CL red-wine
   ‘He is crrying a bottle of red wine in his left hand.’

Nonetheless, there are some problems in this analysis. First, X. Li and Rothstein (2012) does not specify how the complex classifier in (8a) “combines” with the NP. According to X. Li (2011), the complex classifier modifies the NP, but the structure (8a) shows that the whole constituent is a Classifier Phrase. Second, the claim that the numeral expression in structure (8a) is part of a complex classifier is not empirically supported. Note that a numeral expression in the so-called “measure” reading can be as large as a phrase that normally does not undergo lexical head incorporation (e.g., chaoguo yi ‘more than one’ in (10)).

(10) Ta-de jiuliang juedui shi chaoguo yi ping hong-jiu.
    his drinking-ability definitely be more.tha n one CL.bottle red-wine
    ‘His drinking-ability is definitely more than one bottle of red wine.’

Third, Zhang (2013) points out that according to X. Li, the numeral-classifier sequence in (8a) modifies the noun, and thus, the modified NP cannot be deleted, unlike (8b) where the noun is the complement and can be deleted. However, Zhang (2013) shows that even under a measure reading, the so-called modified noun can still be deleted, as shown in (11) (see also (6)). Therefore, I render the analysis (8) not plausible.

(11) Baoyu yao mai san bang yingtao, Daiyu yao mai wu bang yingtao.
    Baoyu want buy three pound cherry Daiyu want buy five pound
    ‘Baoyu wants to buy three pounds of cherries, and Daiyu wants to buy five pounds.’
Taking a different non-unified analysis, Zhang (2013) proposes that measure words expressing “individual, or individuating” readings head a Unit Phrase (i.e., UnitP in (12a)), whereas standard measurements and words expressing “collective, container, or partitive” readings require a left-branching structure, i.e., her Monotocity Phrase (MonP) in (12b).

(12) a. Individual, individuating reading

```
UnitP
  san three
  Unit' NP
    ge xuesheng
    CL student
```

b. Collective, container, partitive readings and standard measurement

```
MonP
  QuantP Mon' NP
    san three
    Quant' Mon
      Φ you
    UnitP
      <san> Unit' NP
        Unit sheng
        CL liter
        N <sheng>
```

The motivation behind this non-unified account is essentially based on the fact that sometimes the modifiers of measure words can contradict modifiers of the noun.

(13) **yuanyuan-de yi guan fang tang**
    round-DE one CL.jar square sugar
    ‘a round jar of sugar cubes’

As shown in the example (13), the modifier of the measure word (**yuanyuan-de ‘round’**) contradicts the modifier of the noun (**fang ‘square’**). Zhang argues that a left-branching structure is required in order to block such modifiers from c-commanding the NP, so that the scope of the left-peripheral modifier excludes the NP.
However, unlike Zhang’s proposals, I believe examples like (13) are exactly the supporting evidence for UnitP being an independent projection dominating NP. I argue that the occurrence of Unit head changes the semantic core of the whole nominal expression, and that the projection UnitP dominates the complement NP. In other words, examples like (13) show that the NP is indeed under the scope of the measure word *guan* ‘jar’. That is, the sugar cubes in (13) have to be organized and referred as a unit of “a round jar”, e.g., (14a) (vs. (14b)).

(14) a. a round jar of sugar cubes  b. a square jar of sugar cubes

The examples in (15) demonstrate the same point. I argue that it is because UnitP dominates NP and expresses the semantic core of the whole nominal expression, the structure allows the modifiers of UnitP to be semantically contradict the modifiers of NP. This idea is not novel, just as TP is relevant to and is extended from vP/VP, and TP structurally c-commands vP/VP, but sentential adverbs only target TP; same as the relation between a transitive verb and its object NP, where the semantic evaluation of the VP modifiers is semantically independent of the complement NP.

(15) a. [UnitP tebie hou-de san pian [NP bo shaoxing]]
   unusually think-DE three CL.piece think bread
   ‘three unusually thick pieces of thin bread’

4 In this paper, I do not consider examples like (i). It is known that examples with adjectives immediately precede classifier are rare, and usually only size adjectives, *da* ‘big’ and *xiao* ‘small’, can occur in such a position. I assume that such expressions are real complex classifiers that are formed morphologically before entering syntax.

(i) liang da-pian xiao binggan
   two big-CL.piece small cookie
   ‘two big-pieces small cookies’

Note that the adjective in the complex classifier does not perform like an adjective phrase. That is, it cannot be realized with the *de*-marker (e.g., (iia)), and it cannot be modified by adverbs like *hen* ‘very’ (e.g., (iib)).

(ii) a.*liang da-de-pian xiao binggan
   two big-de-CL.piece small cookie

b.*liang hen-da-pain xiao binggan
   two very-big-CL.piece small cookie
As shown in the translation of examples in (15), the initial adjectives directly modify the Unit, rather than the NP. It is true that sometimes there is a correlation between the substance/individual and the unit/group of the substance/individual. When it is the case, we may find the modification of Unit extends to its following NP. I suppose that such semantic effects can also be explained through the current proposed structure (7) through c-command. In other words, I argue that the UnitP alone can also account for the same range of facts without complicating the syntax of measure words. Given the current proposal, one may predict that adjectives that only modify NP cannot modify UnitP. The prediction is supported by the contrast shown in (16).

(16) a. \([\text{UnitP} \ \text{san} \ \text{jian} \ [\text{NP} \ \text{shiqian-de} \ \text{guwu}]\]  
   ‘three pieces of prehistoric antiquities’

b. \(?* \text{[UnitP} \ \text{shiqian-de} \ \text{san} \ \text{jian} \ [\text{NP} \ \text{guwu}]\]  
   prehistoric-DE three CL antiquity

In sum, I argue that left-branching structures do not straightforwardly account for the phenomenon at issue, and facts discussed in this section in turn also cast doubts on non-unified accounts. In the next section, I compare the widely adopted right-branching analysis with my simplified right-branching proposal. I will show that the proposed UnitP is syntactically and phonologically motivated, and that the current proposal naturally accounts for other related phenomena.

3 A Simplified Right-branching Analysis: the Unit Phrase

In the literature, proposals that adopt a unified right-branching structure usually analyze Number Phrase (NumP) as an independent projection dominating Classifier Phrase (CLP), and the two projections in turn dominate NP (see Tang 1990, Cheng and Sybesma 1999, Li 1999, Borer 2005, and Huang, Li and Li 2009).
(17) The widely adopted right-branching structure

However, the structure (17) faces some empirical problems. In the following sub-sections, I show why (17) should not be adopted and how syntactic arguments as well as phonological arguments support the current proposal (7) (repeated below).

(7) Proposal: Unit Phrase

3.1 Number Phrase Parasitic on Unit

In this section, I show the structure (17) faces some empirical problems. First, a noun may occur alone or with a Unit, but a noun cannot be accompanied by a numeral alone.

(18) a. Wo jian-guo [N gou].
I see-EXP dog
‘I have seen dogs/a dog.’

b. Wo jian-guo [Unit zhi] [N gou].
I see-EXP CL dog
‘I have seen a dog.’
The contrast between (18a-b) and (18c) is not expected under the structure (17), if we assume that number, Unit, and noun are heads of individual projections, it is not clear why only the numeral behaves differently. Note that demonstratives can also co-occur with noun alone, like Unit.

(19)  Wo jian-guo [Demonstrative na] [N gou].
I see-EXP that dog
'I have seen that dog.'

Second, a numeral must always co-occur with a Unit within a nominal expression. The examples in (20) and (21) show that the grammaticality with or without Unit is consitant in both indefinite and definite expressions. Unit must occur in the nominal expression when there is a numeral.

I see-EXP three dog
'I have seen three dogs.'

b. Wo jian-guo san zhi gou.
I see-EXP three CL dog
'I have seen three dogs.'

I see-EXP that three dog
'I have seen those three dogs.'

b. Wo jian-guo na san zhi gou.
I see-EXP that three CL dog
'I have seen those three dogs.'

In other words, numeral expressions are parasitic on the realization of Unit. If one postulates that Number Phrase dominates Unit (classifier) and noun, it is difficult to explain why the occurrence of the numeral always relies on the occurrence of classifier, a constraint not observed in other heads within nominals. Instead, the current analysis argues that Unit and N are head elements whereas number phrase is the specifier of UnitP. It structurally suggests that head elements can each co-occur with a noun, but number phrases is less independent, since it is the specifier of UnitP, unlike other heads.
3.2 The Distribution of Modifiers against NumberP > UnitP

The distribution of relative clauses and adjectives also argues against (17) but supports the UnitP structure (7). Given the DP hypothesis proposed for Mandarin (see Li 1998, Hsieh 2005, Tang 1990, 2005, Huang et al. 2009), I show that a relative clause can occur before a DP (e.g., (22a)), between a demonstrative and a UnitP (e.g., (22b)), or between a classifier and an NP (e.g., (22c)). However, a relative clause never occur between a number phrase and a classifier, as shown in (23).

(22) a. \[ \text{DP} \left[ \text{RC} \text{ meiren yao de} \right] \text{ na } \text{ shi } \text{ ben } \text{ shu } \]  
   \begin{tabular}{lllll}
   nobody & want & DE & that & ten & CL & book 
   \end{tabular}  
   ‘those ten volumes of books, which nobody wants’

   b. \[ \text{DP} \text{ na} \left[ \text{UnitP} \left[ \text{RC} \text{ meiren yao de} \right] \text{ shi } \text{ ben } \text{ shu} \right] \]  
   \begin{tabular}{lllll}
   that & nobody & want & DE & ten & CL & book 
   \end{tabular}  
   ‘those ten volumes of books that nobody wants’

   c. \[ \text{DP} \text{ na} \left[ \text{UnitP} \text{ shi ben} \left[ \text{NP} \left[ \text{RC} \text{ meiren yao de} \right] \text{ shu} \right] \right] \]  
   \begin{tabular}{lllll}
   that & ten & CL & nobody & want & DE & book 
   \end{tabular}  
   ‘those ten volumes of books that nobody wants’

(23) *[\[ \text{DP} \text{ na} \text{ UnitP} \text{ shi [RC meiren yao de] ben [NP shu ] ]} \]  
   \begin{tabular}{lllll}
   that & ten & CL & nobody & want & DE & book 
   \end{tabular}  
   ‘those ten volumes of books that nobody wants’

Assuming that a modifier may uniformly be introduced to the left-periphery of a phrase in Mandarin (see Huang 1982), and based on the structure (17), one may wonder why a relative clause is banned at the left-periphery of CLP (e.g., (23)). However, the contrast between (22) and (23) can be accounted for naturally under the proposed structure (7). I argue that each such phrase functions as the interpretive scope of the modifier (see (22)), and that since a numeral is the specifier of UnitP, modifiers cannot intervene between the numeral and Unit’ (see (23)). The distribution of adjectives demonstrates the same point.

(24) a. \[ \text{DP} \left[ \text{hen gui de} \right] \text{ na } \text{ shi } \text{ ben } \text{ shu}] \]  
   \begin{tabular}{lllll}
   very & pricy & DE & that & ten & CL & book 
   \end{tabular}  
   ‘those ten volumes of books, which are pricy’

   b. [\text{na} \text{ UnitP} \left[ \text{hen gui de} \right] \text{ shi } \text{ ben } \text{ shu}] \]  
   \begin{tabular}{lllll}
   that & very & pricy & DE & ten & CL & book 
   \end{tabular}  
   ‘those ten pricy volumes of books’
The examples in this section show that modifiers of nominal expressions show consistent distribution within a complex nominal, and that the proposed structure (7) naturally explains the distribution of adjectives and relative clauses, whereas the generally adopted structure (17) would wrongly generate expressions like (23) and (24d), or leave such facts unaccounted for.

3.3 The Third Tone Sandhi against NumberP > UnitP

The phenomenon of the third tone sandhi also supports the proposed structure (7). In Mandarin, the third tone [214] must undergo tone sandhi and become the second tone [35] when the syllable carrying [214] is followed by another syllable carrying [214]. An example of such sandhi rule application is shown in (25).

(25) Mandarin Third tone sandhi: 

lao.shu ‘mouse’

a. Underlying tone: \[214\]214
b. Surface tone: \[35\]214

In addition to words and compounds, the third tone sandhi rule also applies within phrases and sentences. The generalization reported in the phonology literature is that when the structure is left-branching, only one sandhi pattern is observed, but when the structure is right-branching, more than one pattern is available (see Duanmu 2005 and the references therein). While there is no consensus on the domain of application in phonology literature, interesting, if we pay closer attention to the syntactic structure of the data reported, we find that among the right-branching examples, the sandhi rule applies optionally between a head and its complement, however, if a phrase serves as a specifier/modifier of a head, the sandhi rule applies obligatorily. For instance, generally speaking, adverbs are analyzed as specifier/modifier of the head adverb or the head verb in an Adverb Phrase or a Verb Phrase, respectively. The examples in (26) show that adverbs and their head always form a prosodic unit, and the third tone sandhi rule always applies.

(26) a. \[VP [Adv [AdvP hen] hao] yang] ‘very easy to raise’

Underlying tone: \[214\]214 214
Surface tone: \[35\]35 35 214
Similarly, assuming that adjectives are specifier/modifier of the head noun, we can find examples like (27) show that the same tone sandhi phenomenon is observed between adjectives and nouns, i.e., the third tone sandhi rule is applied obligatorily.

(27) a. \[
\text{[NP [Adj] hao jiu]} \quad \text{‘good wine’}
\]

- Underlying tone: 214 214
- Surface tone: 35 214

b. \[
\text{[NP [Adj] jue mei]} \quad \text{jing.guan} \quad \text{‘splendid view’}
\]

- Underlying tone: 35 214 214.55
- Surface tone: 35 35 214.55

The third tone sandhi phenomenon provides another interesting argument supporting the proposed structure (7), but against (17). (28) shows that the third tone sandhi rule always applies between the numeral (\textit{wu bai} ‘five hundred’) and the Unit (\textit{dang}), although it can be optionally applied between the classifier (\textit{dang}) and the noun (\textit{ying.pain} ‘movie’) (cf. (28b) vs. (28c)).

(28) \textit{wu.bai}\textit{ dang}\textit{ ying.pain} ‘five hundred movies’

a. Underlying tone: 214.214 214 214.51

b. Surface tone: 35.35 35 214.51
   Syntax structure: \[
   \text{[UNITP]}\]

c. Surface tone: 35.35 214 214.51
   Syntax structure: \[
   \text{[UNITP}}\quad \text{[NP]}\]

Following the generalization reported in the phonology literature, the two acceptable tonal patterns (28b) and (28c) show that the phenomenon at issue involves “right-branching structure”, and thus, more than one tonal pattern is available. Next we need to consider why the third tone sandhi rule only optionally applies between Unit and NP. According to Cinque’s (1993) Null Theory of Phrase Stress, when a complement is present, the complement is the stress bearer, rather than the head and the specifier, and specifiers/modifiers are always weak. Given the Mandarin data presented so far, I hypothesize that Cinque’s proposal on phrasal stress assignment may be applied to the phenomenon of third tone sandhi within the phrasal domain in
Mandarin. That is, the third tone sandhi rule obligatorily applies between the numeral and the classifier (e.g., (28b) and (28c)) since the numeral is the specifier of UnitP. The sandhi rule, however, has an option between the Unit and the NP: the sandhi rule can apply because two third tones are adjacent (e.g., (28b)), but it does not have to apply (e.g., (28c)) because NP is syntactically the complement of Unit.

Following the same reasoning, if one analyzes a number phrase taking a classifier phrase as its complement (as in (17)), this analysis would wrongly predict that the sandhi rule can be optionally apply between the numeral and the Unit, contrary to the facts (e.g., (28) above vs. (29) below).

(29)  
<table>
<thead>
<tr>
<th>wu.bai</th>
<th>dang</th>
<th>ying.pian ‘five hundred movies’</th>
</tr>
</thead>
<tbody>
<tr>
<td>five.hundred</td>
<td>CL</td>
<td>movie</td>
</tr>
</tbody>
</table>

a. Underlying tone: 214.214 214 214.51

b. *predicted tone: 35. 214 214.51

c. Syntax structure: \[N_{U M P} [C_L P [N_P]]]\]

The preceding examples show that the commonly adopted structure (17) faces empirical challenge syntactically and phonologically, but the current proposal (7) can correctly predict the distribution of modifiers, the third tone sandhi application, and the interpretation of modifiers within nominal expressions through a unified right-branching account. In Section 4, I show that this proposal further gain supports from phenomena of nominal coordination and nominal internal ellipsis.

4 The Structural Prediction of UnitP

4.1 Nominal Coordination

The proposed structure (7) echoes an observation on nominal coordination in Mandarin reported by Aoun and Li (2003). Aoun and Li point out that coordinators in Mandarin exhibit categorical restriction. Coordinator that are relevant to nominal expressions are summarized in (30).

(30)  
a. jian ‘and’: coordinates two NPs
b. he ‘and’: coordinates two DP

The example in (31) shows that when two phrases lower than the UnitP (their classifier) are coordinated, jian ‘and’ is used, but not he ‘and’.
(31) Wo xiang zhao yi ge [NP [RC fuze yingwen de] [NP mishu]]
I want find one [CL charge English [DE secretary

jian/*he [NP [RC jiao xiaohai de] [NP jiajiao]].
and teach kid [DE tutor

‘I want to find a person who can be a secretary that takes care of English
(matters) and can be kids’ tutor.’

Nonetheless, when two conjuncts both have demonstratives, only he ‘and’ is allowed, e.g., (32).

(32) Wo xihuan [DemP [RC fuze yingwen de] [DP na yi ge mishu]]
I like [CL charge English [DE that one

*jian/he [DP [RC jiao xiaohai de] [DP na yi ge jiajiao]].
and teach kid [DE that one

‘I like the secretary who takes care of English (matters) and the tutor that
teaches kids.’

Based on the proposed structure (7), one may predict that UnitPs can be coordinated. The
example in (33) shows that the relative clauses signal the maximal UnitP are coordinated, and
that UnitPs are coordinated by he ‘and’.

(33) Wo xihuan na [UnitP [RC fuze yingwen de] [UnitP san wei mishu]]
I like that [CL charge English [DE three

*jian/he [UnitP [RC jiao xiaohai de] [UnitP liang wei jiajiao]].
and teach kid [DE two

‘I like those three secretaries who take care of English (matters) and those two tutors that
teach kids.’

Note that no matter which coordinator is used, trying to coordinate two numeral phrases
is not allowed in Mandarin.

(34)* Wo xihuan na [NumP [RC fuze yingwen de][NumP san ]
I like that [CL charge English [DE three

jian/he [NumP [RC jiao xiaohai] [NumP liang wei mishu ]].
and teach kid [DE two

‘I like those three secretaries who take care of English (matters) and those two tutors that
teach kids.’
4.2 Nominal Internal Ellipsis

Following Lobeck that ellipsis is licensed by a functional head and following Merchant (2001) that structural identity is respected in ellipsis, I show that sentences with ellipsis support the proposed structure, i.e., the ellipsis site can be NP or UnitP.

Example (35) shows that the elided part can be recovered from its antecedent NP, \textit{shangyi} ‘shirt’. Note that the presence of Unit \textit{jian} (the classifier of clothes) to the left of the ellipsis site suggests that what is elided in this sentence indeed is an NP.

\begin{enumerate}
  \item \textit{NP} \hfill \textbf{(35)}
  \begin{itemize}
    \item \textbf{Wo} only see
    \begin{itemize}
      \item \textbf{[DP [RC Xiaomei zuotian mai de] na san jian [NP shangyi], Xiaomei yesterday buy DE that three CL shirt]}
      \item \textbf{[DP [RC ta jintian gang mai de] na san jian [NP shangyi]]}
    \end{itemize}
  \end{itemize}
  ‘I only see those three shirts that Xiaomei bought yesterday, but I don’t see those three [shirts] that she just bought today.’
\end{enumerate}

A similar effect is found with respect to UnitP. (36) shows that ellipsis targets the UnitP, \textit{san jian shangyi} ‘three shirts,’ which is embedded inside of a DP.

\begin{enumerate}
  \item \textit{UnitP} \hfill \textbf{(36)}
  \begin{itemize}
    \item \textbf{Ni can buy}
    \begin{itemize}
      \item \textbf{[DP na [UnitP [RC you biaqian de] [UnitP san jian shangyi]]]},
      \item \textbf{[DP na [UnitP [RC mei you biaqin de] [UnitP san jian shangyi]]]}
    \end{itemize}
  \end{itemize}
  ‘You could buy those three shirts with tags, but should not buy those [three shirts] without tags.’
\end{enumerate}
However, unlike the current analysis, an analysis adopting (17) would not be able to directly explain the following ungrammatical example in which the classifier phrase that is analyzed as the complement of number is elided.

(37)  NumberP

* Wo zhi kandau[DP zhe [NumP san [CIP jian [NP shangyi ]]]].
  I only see this three CL shirt

dan wo mei kandau[DP na [NumP san [CIP jian [NP shangyi ]]]].
  but I not see that three CL shirt.

‘I only saw these three shirts, but I don’t see those three [shirts].’

The preceding discussion shows that UnitP is syntactically dominating NP but NumP is better analyzed as the specifier of UnitP. In the following sections, I will show how the proposed structure helps us explain the facts related to the interpretations of nominal expressions.

5 Syntax-Semantics Correlations

The proposal suggests that a nominal expression in Mandarin may be realized as a phrase of distinct size (e.g., DP, UnitP, NP). I have shown that a nominal expression in Mandarin may appear as Noun alone or as Noun accompanied by one or both of Demonstrative and Unit. However, Number appears only contingently on the introduction of Unit, as expected under the proposed analysis in (7). I argue that measure words should be analyzed as UnitP that changes the semantic core of the whole nominal expression. That is, the realization of UnitP syntactically expresses quantity and or measurement of a defined unit of nouns.

To begin, given the proposed structure, one may infer that when the UnitP is projected as the highest projection of a nominal, such an expression only denotes quantity of a unit, and that such an expression would not be referential. The conjecture is borne out. Example (38) shows that the quantity-denoting adverb yigong ‘altogether’ is not compatible with a referential DemP, but only with UnitP.

(38) a. Ta yigong mai-le [UnitP wu ben shu ].
  he altogether buy-PERF five CL book
  ‘His purchasing of books totaled 5 volumes.’

b. #Ta yigong mai-le [DP zhe wu ben shu ].
  he altogether buy-PERF this five CL book
  ‘He bought altogether these five books.’

5 The sentence in (38b) may become acceptable when the speaker is pointing at five books that are physically present. The pragmatic effect involved is outside of the scope of the current study, so I leave the explanation for future study.
Moreover, it is known that a nominal expression containing only number-Unit-Noun is not referential, unlike a nominal expression containing a demonstrative. Under the proposed structure, it suggests that UnitP cannot co-refer with or bind a pronoun but a DP can. The contrast in example (39) shows that a UnitP is not referential, whereas a DP is.

(39) a. *[UnitP San ge ren] tai-bu-qi liang jia ni gei tamen-de gangqin.
   three CL man lift-not-up two CL you give them -DE piano
   ‘Three people cannot lift two (of the) pianos that you gave to them.’
   (from Huang et al. 2009:290, modified with the proposed structure)

   b. [DP Na san ge ren] tai-bu-qi liang jia ni gei tamen-de gangqin.
      that three CL man lift-not-up two CL you give them -DE piano
      ‘Those three people cannot lift two (of the) pianos that you gave to them.’

In sum, I argue that measure words at issue should be analyzed as the head of UnitP, and that the realization of UnitP changes the semantic core of the whole nominal, and its complement NP is perceived and interpreted under the scope of UnitP. Based on the proposed structure, we also have a way to structurally distinguish nominal expressions that only denote quantity or measurement from DP and NP.

6 Concluding Remarks

In this paper, I argued that UnitP should be identified as a distinct projection dominating NP in Mandarin. This paper showed that the proposed structure accounts for the distribution of nominal modifiers, the restriction of the occurrence of numeral, Unit, and Noun within a nominal, and the third tone sandhi application. I showed that the realization of UnitP changes the semantic core of the whole nominal, and that NP is under the scope of UnitP. I had also shown that quantity denoting adverbs are only compatible with UnitP, and that UnitP is not referential, unlike DP. The proposed structure also directly and correctly predicts the realization of nominal coordination and nominal internal ellipsis, and provides a simpler way to explain the phenomenon at issue through a unified account.

7 References


On the Category of Speaker Expectation of Interlocutor Knowledge in Kurtöp

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1 Introduction
Kurtöp is an under-described and threatened Tibeto-Burman language of Northeastern Bhutan, spoken by approximately 15,000 native speakers. Existing literature on Kurtöp has described a complex and fascinating system of epistemic contrasts, involving mirativity, egophoricity, evidentiality, and other related categories (e.g. Hyslop 2011a; 2011b; 2014a). The aim of this article is to bring into focus one of the most unique aspects of this system -- that is, the contrast of speaker expectation of interlocutor knowledge. As I will show, Kurtöp grammar requires speakers to anticipate the knowledge status of their interlocutors in the following grammatical contexts: perfective aspect, tags, and questions. This contrast is unlike evidentiality (source of knowledge) but perhaps related to mirativity (expectation of knowledge) and appears to be undescribed elsewhere in the literature. That is, this article proposes a new typological category based on data from Kurtöp: the category of speaker expectation of interlocutor knowledge.

The discussion begins in §2 with background information on Kurtöp and a presentation of the relevant definitions. The next three sections present the Kurtöp data, with §3 focusing on perfective aspect, §4 focusing on the tag particles, and §5 discussing question formation. A summary and conclusion is offered in §6.

2 Background

2.1 Kurtöp
Kurtöp belongs to the East-Bodish sub-branch of the Tibeto-Burman family. East Bodish languages have been described as close relatives of Tibetan, but constitute a sub-branch in their own right (e.g. Hyslop 2014b). Like most Tibeto-Burman languages Kurtöp has verb-final syntax. Core arguments generally precede the verb and in the case of bivalent verbs, the A argument will precede the O argument. However, this AOV order is a generalization; in natural speech arguments may follow the verb, depending on pragmatic factors. Verbal arguments are not required overtly and, in fact, are often missing in natural discourse.

Kurtöp clauses can be broadly divided into two categories: those that end in a copula and those that end with a finite-marked verb. For those constructions in the former category, a copula

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may be used to encode typical copular functions (existence, equation, prediction, location, possession), may be used in conjunction with a clausal nominalization or may be used with a non-final marked converb in the clause-chaining construction. Clauses that do not end in a copula will consist of minimally a verb plus a finite suffix.

Verbs are usually composed of two to three morphemes within three to four syllables and it is not unusual for verbs to consist of five syllables. There is one prefix in the language (the negative marker) and the remainder of verbal morphology comprises suffixes and enclitics. A verb stem is almost always monosyllabic. Any stem can be negated and can take any of the mutually exclusive suffixes (though not all suffixes can co-occur with the negative marker). There are four enclitics which speakers can use at the end of the clause, so that they would be attached to a copula, in the case of a copular clause, or attached to the end of the finite-marked verb, in the case of a copula-less clause. The examples below show the hearsay enclitic attached to a finite verb in (1)², and to a copula in (2).

(1) khit geshangri
[khit ge-shang]=ri
3.ABS go-PFV. EGO=HSY
‘(I heard that) he went.’

(2) khit gewala wentari
[khit ge-pala wenta]=ri
3.ABS go-NMZ:PFV COP.EQ.MIR=HSY
‘(I heard that) he went indeed!’

Kurtöp has a very complex mirative/evidential/epistemic system and the contrasts described in this article play a small role in the system at large. Various aspects of the system have been described in Hyslop (2011b, to appear) and the system as a whole is presented in (2014a). The aim of this article is to focus on what I argue is a category distinct from evidentiality and mirativity -- the category of speaker anticipation/expectation of interlocutor knowledge. Data presented in this article will be at first introduced as part of the paradigmatic system to which they belong before expanding on use.

The approximate location of the Kurtöp speech community is shown in Figure 1. The majority of examples presented here come from natural data collected during fieldwork conducted in Bhutan between 2006 and 2013. Most examples are drawn from a database consisting of transcribed narratives and conversations from over ten speakers, males and females, ranging in age from early twenties to seventies.

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² Data are presented in a Romanized orthography as follows: <k> [k], <kh> [kʰ], <g> [g], <ng> [ŋ], <c> [č], <ch> [čʰ], <j> [j], <ny> [ɲ], <tr> [tʰ], <th> [tʰ], <dr> [d], <th> [tʰ], <d> [d], <p> [p], <ph> [pʰ], <b> [b], <m> [m], <ts> [ts], <tsh> [tʃʰ], <sh> [ʃ], <zh> [ʒ], <s> [s], <z> [z], <lh> [l], <r> [r], <a> [a], <e> [ɛ], <i> [i], <o> [o], <u> [u], <ö> [ø], <ü> [y], <'CV> high tone on following vowel, <^> long vowel.
As this article argues for a previously undescribed linguistic category, it will be useful to begin with some terminology used to designate related categories. Evidentiality, which has received substantial attention in the literature, is the grammaticalized encoding of information source (Aikhenvald 2004:14). A related but distinct category is that of mirativity, described by DeLancey (1997) as ‘the status of the proposition with respect to the speaker’s overall knowledge structure’. In Hyslop (2011b) I define mirativity as encoding expectation of knowledge. The term ‘egophoric’ is used to describe a related category but has received less attention in the literature. For our purposes, we can use Tournadre (2008) as a starting point; he describes egophoric as expressing ‘personal knowledge or intention on the part of the actual speaker’ (2008:295). He goes on to describe a contrast between narrow and broad scope of egophorics and it appears the narrow scope is most similar to the Kurtőp category. The precise nature of the Kurtőp ‘egophoric’ will become clearer as we proceed.
3 Perfective Aspect

Kurtöp makes a five-way contrast in perfective aspect, as summarized in Figure 2. This analysis has been put forth in other publications, including Hyslop (2011b; 2014; to appear) but is updated slightly here.

![Figure 2. Kurtöp perfective aspect markers](image)

The five forms can be understood as follows. If a speaker is not certain of the knowledge they are conveying, the form -para will be used. If a speaker is certain of the knowledge, further contrasts are made. For contexts in which the speaker gained their evidence indirectly, through inference, the indirect evidential form -mu will be used. If the speaker has direct evidence but was not anticipating the event, the mirative form -na will be used. When the speaker has no basis to use the mirative but is certain and gained evidence for the event directly, a two-way contrast is made. For contexts in which the speaker has exclusive access to knowledge the form -shang will be used while in non-exclusive contexts the form -pala will be used. This contrast will be the focus of the next two sections.

3.1 -shang

Kurtöp -shang is used to encode perfective aspect with direct evidential value when the speaker has direct evidence of the experience and there is no expectation that the interlocutor would have
direct evidence. This is usually used with first person arguments and is given as the default form for perfective first person utterances in elicitation. For examples from natural speech, consider (3) and (4):

(3) khici mengya zhit geshang
khici meng=ya zhit ge-shang
3.GEN name=also forget go-PFV.EGO
‘(I) also forgot his name.’

(4) Paroko yumgi ngâ zonshangmi
Paro=ko yum=gi ngak zon-shang=mi
Paro=LOC mother.HON=ERG do send-PFV.EGO=TAG.EXCL
‘The mother sent (me) to Paro.’

Both examples are statements uttered from one speaker to an interlocutor who would not already have the knowledge. In the case of (3), the speaker realized mid-narration that she had forgotten the name of a particular character in a story. The act of forgetting is very much a personal experience by default and thus the use of -shang would be expected; the speaker clearly has exclusive access to this knowledge without any expectation her interlocutor would share her lack of remembrance. Example (4) is slightly different in nature. Sending something is not intrinsically personal in the same way forgetting is but in this particular context two speakers who had not previously known each other were engaged in conversation. One speaker was relaying an experience he had while working for a Rimpoche in Bhutan and this information was new to the interlocutor. In both (3) and (4), the speakers themselves were also actors/patients and the interlocutor did not previously have access to the knowledge.

However, -shang is not limited to first person arguments; it can also be used for third person when the speaker has privileged access to the knowledge. Consider (5):

(5) zhing phepschang
zhing phep-shang
heaven arrive.HON-PFV.EGO
‘(The lama) passed away.’

This example comes from the same conversation as (4). The speaker had worked for a lama for some time and was closely associated with the lama’s life and ultimate death. The interlocutor had heard of the lama but did not know him personally and did not know he had passed away. The speaker uses -shang in this case because of his privileged access to knowledge about the lama.

Examples with second person are rare, but not impossible, as in (6):

(6) da wit boishang, gilu
da wit boi-shang ge-lu
now 2.ABS recover-PFV.EGO go-IMP
‘Now you are recovered; go.’

The context for (6) is a conversation between a doctor and a patient. The patient had spent some time in the hospital being treated for an illness. The doctor who had treated the patient had privileged access to knowledge of the patient’s health while the patient himself was ignorant. Once the doctor had successfully treated the patient he uttered (6). Even though the statement is in reference to second person, the form -shang is used because the speaker had exclusive access to knowledge which was not shared with the interlocutor.

3.2 -pala

Like -shang, Kurtöp -pala (with allomorphs -wala and -sala) encodes speaker certainty and direct evidence. However, in contrast to -shang, -pala does not encode exclusive access to knowledge; rather, it entails an expectation that someone else also has direct knowledge of the event. Thus, this form usually occurs with second or third person and is given as the default second and third person perfective form in elicitation. Two examples from natural discourse are shown in (7) and (8)³.

(7) dutshot  matshangwala
dutshot ma-tshang-pala
time     NEG-be.complete-PFV
‘The time wasn’t up’

(8) Nya Gompa la ’lepsong sungwalari Guru Rimpoche=gi
Nya Gompa la ’lepsong sung-pala=ri Guru Rimpoche=gi
Nya Temple LOC arrived say.HON-PFV=HSY Guru Rimpoche=ERG
‘“(It) arrived at Nya Temple”, Guru Rimpoche said.’

Example (7) comes from a narrative, evidencing a canonical use of -pala. The speaker, engaged in story-telling and not sharing personal experience, does not have exclusive access to the knowledge at hand and thus uses -pala rather than -shang. The same can be said of (8); the speaker is telling a story and does not have exclusive access to the knowledge at hand.

While -pala usually occurs with third person referents, it can occur with first person referents if the interlocutor has direct knowledge of the event, as in (9).

(9) tshachu bang niye ’yaura drâ ngak lappala ngai
tshachu bang ni-le ’yau=ra drak ngak lap-pala ngai
hotsprings bathe stay-IMP UP=EMPH be.good QUOT tell-PFV 1.ERG

³ Note that the locative marker la and subordinate verb ’lepsong are both borrowings from Tibetan.
“‘Stay in the hot springs up there; it is good’, I said.’

Perhaps not surprisingly, -pala is often used with first person plural referents. In such contexts, the speaker, obviously, usually does not have exclusive access to knowledge as the event was shared with another person. As a result, -shang would be less appropriate. Example (10), drawn from an interview with two elderly speakers, illustrates -pala with a first plural referent.

(10) neci gangna woso kau chut-pala
neci gang=na woso kau chut-pala
1.PL.EXCL GEN time=LOC like that pillar cut-PFV

‘How difficult it was in our time! (lit. how we cut pillars in our time)’

In short, the difference between -shang and -pala is whether or not the speaker has privileged or exclusive access to knowledge.

4 Enclitics

In addition to encoding evidentialty or evidential-like categories throughout the verbal and copular paradigm, Kurtöp has several enclitics that encode related categories. One clitic, =ri, is an evidential, marking oral source of knowledge. Another clitic, =sa, marks that an event or the result of an event was counter to expectation. The final two clitics are tags, differing by whether or not the speaker expects the interlocutor to share the knowledge. These four clitics are summarized in Table 1 and the remainder of this section discusses the difference between the two tags.

<table>
<thead>
<tr>
<th>ENCLITIC</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>=ri</td>
<td>Hearsay</td>
</tr>
<tr>
<td>=sa</td>
<td>Counter Expectation</td>
</tr>
<tr>
<td>=mi</td>
<td>Tag.EXC</td>
</tr>
<tr>
<td>=wu</td>
<td>Tag.INCL</td>
</tr>
</tbody>
</table>

Table 1. Verbal clitics

4.1 Exclusive Tag =mi

As with other tags, the primary function of =mi is to involve the interlocutor into the conversation, seeking a response or agreement. However, in using tags, Kurtöp speakers are required to take into account the state of knowledge of their interlocutor. The tag =mi is chosen for the contexts in which the speaker does not anticipate the interlocutor to already share the knowledge, for example if the speaker is relaying novel information or telling a story. Some examples will help elucidate this further.
The exclusive tag =mi is common in conversation between two strangers getting to know each other. Both (11) and (12) are drawn from a conversation between two people getting to know each other. The speaker in (11) and (12) is relaying information about mutual acquaintances back in Bhutan, realizing his interlocutor does not already have knowledge about these particular events. Thus, when choosing a tag he uses =mi.

(11) hapta zonbakti nishangmi ngai tamo  
hapta zon-bakti nishang=mi ngai ta-mo  
week two-APPROX stay-PFV.EGO=TAG.EXC 1.ERG see-CTM  
‘He stayed about two weeks, right, in my opinion.’

(12) tshe khit nya thungmo nya zhiknami  
tshe khit mya thung-mo mya zhik-na=mi  
DM 3.ABS arrow do-CTM arrow be.hit-PFV.MIR=TAG.EXC  
‘While playing archery he was hit by an arrow, right.’

Not surprisingly, =mi is a common tag in story-telling, bringing the speaker into the discourse but with the assumption they do not already share the knowledge. Example (13) is a typical introduction of something new in a story. Here, the exclusive tag attaches to the mirative copula wenta.

(13) gonpathe nawal wetami  
gonpa=the nawala wenta=mi  
hermit.house=DEF COP.EXIS COP.EQ.MIR=TAG.EXC  
‘There was this hermit house, right.’

Another typical use is explaining a procedure to someone who is unfamiliar. Example (14) comes from a procedural narrative, where the speaker is explaining to the foreign interlocutor how rice is farmed in the village. In general, the tag =mi is used with people the speaker does not know well.

(14) asu dar ciktami  
asu dara cik-ta=mi  
asu (rice type) now be.beaten-IPFV.MIR=TAG.EXC  
‘Asu is being beaten right now, right.’

4.2 Inclusive Tag =wu

Like other tags, =wu (dialectal variant au) bring the interlocutor into the conversation, often resulting with the interlocutor nodding or vocalizing an agreement. However, the use of =wu is re-
stricted to contexts in which the speaker expects the interlocutor to share his/her knowledge. Not surprisingly, this form is used frequently between people who know each other well.

Consider (15):

(15) dakpa **wenau** neriki
    Dakpa wen=**au** ner-ki
    Dakpa COP.EQ=TAG.INCL I.INCL.GEN-GEN
    ‘Ours is Dakpa, right?’

This example was drawn from an interview between two people from the same village. They were discussing the various types of rice grown in the village and the speaker frequently uses the tag =au (variant of **wu**) during the conversation. She uses the tag to bring the interlocutor into the conversation, asking for agreement, but chooses =au because she knows her interlocutor already shares the knowledge.

The next two examples come from a conversation between two speakers who are getting to know each other the first time. They realize they are from the same region in Bhutan and begin discussing the area. One speaker utters (16), using the inclusive form of the tag, because he now knows his interlocutor shares the knowledge.

(16) Tangmachu gesai yamna Chazam **wenwu**
    Tangmachu ge-sa=gi yam=na Chazam wen=**wu**
    Tangmachu go-NMZ:PL=GEN road=LOC Chazam COP.EQ=TAG.INCL
    ‘On the way to Tangmachu, it’s Chazam, right.’

The data in (17) are from a similar context, though this time the speaker is drawing from his knowledge that the interlocutor is also familiar with Bhutanese and American culture. The speakers are discussing dogs in America and comparing them to dogs in Bhutan. In the latter, dogs are most commonly stray and found begging in the streets. They are dirty, uncared for, and may have rabies. This is a very different life compared to an American dog, which is often very well cared for, to the extent there are places devoted for dog food, dog toys, people to walk the dog, and so on. According to Bhutanese Buddhist belief, dogs are born as such in Bhutan because they have committed sins in their past lives and thus have to suffer as a Bhutanese dog in this life. American dogs, on the contrary, have such a pleasant life that (17) is a sensible explanation. Note again the use of the inclusive tag =wu as the speaker knows his interlocutor shares this unique view of the world.

(17) khwi gap le **daknawu**
    khwi gapo le dak-na=**wu**
    dog PL.FOC sins be.cleansed-PFV.MIR=TAG.INCL
    ‘The dogs have been cleansed of their sins, right?’
The above examples provide a few contexts for when =mi versus =wu is used, though several others could be offered as these tags are very common in the discourse. They may take on particular pragmatic overtones in use which warrant further study. For example, use of =mi with someone who does share knowledge of the event is considered sarcastic and can be offensive. Speakers will occasionally self-correct from =mi to =wu, presumably realizing their interlocutor may, in fact, share their knowledge.

5 Question Particles

Question particles also intersect with the category that marks speaker expectation of interlocutor knowledge. Question formation in Kurtöp is complex, involving various suffixes and particles depending on the grammatical context (cf. Hyslop 2011a for a full description). For our purposes here, it will suffice to summarize by stating that a range of particles are used when the speaker expects the interlocutor to have the answer while the particle shu ‘QP:DBT’ will be used when the speaker does not expect the hearer to have the answer. These particles are discussed below.

5.1 Expected

The default question constructions in Kurtöp are for contexts in which the speaker expects the interlocutor to have the answer; these form the majority of questions in the language. For example, when asking a wh- question, the particle yo will be used. An example is (18):

(18) zhunggi dazin ngâko matshunani zhâ ngaksi bretak yo ngaksi
zhunggi dazin ngâko matshunani zhâ ngaksi bretak yo ngaksi
zhungg=gi dazin ngak-to ma-tshuk-nani zhâ ngak-si
government=ERG care do-INF NEG-be.able-COND what do-NF
blek-taki yo ngaksi
keep-IPFV QP QUOT
‘The government (says) “If you aren’t able to care for (the dog) then why keep (it)?”’

The speaker in this example takes the point of view of the government asking someone about their dog. The default expectation here is that a dog’s owner would be expected to have the answer the question.

Polar questions, depending on the grammatical context, require the particle ya, as in (19):

(19) khiksana ya
khik-sa=na ya
be.cold-NMZ:LOC=LOC QP
‘In a cold place?’

The description here is a somewhat simplified presentation of question formation in Kurtöp. For further details refer to Hyslop (2011a) but for our purposes let it suffice that when
speakers anticipate their interlocutors to have the answer, they will use question particles as described above. This situation contrasts with the contexts in which the speaker does not have this expectation, as discussed immediately below.

5.2 Unexpected

When the speaker does not expect the hearer to know the answer, for example when asking a rhetorical question, the speaker replaces the question particle (regardless of what it is) with *shu*. However, *shu* is not simply used for rhetorical questions. The speaker must take into account the interlocutor’s knowledge of the situation and determine whether or not *shu* would be appropriate.

Example (20) is drawn from the texts:

(20) ngaita zhâ lapmal *shu* da?

ngai-ta zhâ lap-male *shu* da

1.SG.ERG-EMPH what speak-FUT QP:DBT now

‘Now what should I talk about?’

This question comes from the beginning of an interview of two people. Prior to the beginning of the recording, we discussed what the topic of the interview would be. One speaker would ask questions to the other speaker about rice cultivation and related farming practices in the village and the other speaker would answer. The speaker of (20) knew the topic but uttered (20) before starting. She did not wait for a reply; she simply posed the question out loud and then moved on to the discussion.

A similar example is shown in (21), which was overheard inside a villager’s home:

(21) ’ê *shu*

’ê *shu*

who QP:DBT

‘Who is it?’

This question was uttered by the housewife upon hearing the door open to the house and someone enter. She did not direct the question at anyone in particular but rather was almost thinking aloud, wondering who it could be.

The above two examples show questions that could, arguably, not be directed at a particular interlocutor. However, in my experience *shu* ‘QP:DBT’ is also used with interlocutors. For example, we spent a few days walking through the forests identifying plant names and uses. Most of this data collection was conducted in the Kurtöp language. I asked villagers the various names and uses of nearly every plant I saw, but realized after some time that I was making the villagers uncomfortable. It was only after this experience and through discussion with consultants that I discovered I was using the wrong question construction. The villagers were not expected to be able to identify all the plants in the forest, but my direct questioning implied I did
expect them to be able to. In that instance, I was told I should have been using the form shu ‘QP.DBT’.

6 Summary and Conclusions

Kurtöp speakers take into account their expectations of other's knowledge in perfective aspect, in tags, and when asking questions. In other words, in some grammatical contexts, they are required to anticipate the state of knowledge of their interlocutor. In perfective aspect, the relevant suffixes, -shang and -pala are used when speakers are certain, have direct evidence, and when the event was not unexpected. The primary contrast between the two forms appears to be one of speaker access to knowledge. If the speaker has privileged access to knowledge the form -shang is selected; otherwise -pala is used. Thus, the speaker has to take into account the knowledge state of the interlocutor, as well as that of other people. If the knowledge is privileged to speaker, and thus new to the interlocutor, the form -shang will be used; -shang is not used when the interlocutor already shares the knowledge. Similarly, we saw a two-way contrast in tag particles. The tag =wu is used when speakers expect the interlocutor to share the knowledge while =mi is reserved for contexts when the information is new for the interlocutor. The final forms discussed were question particles. A set of forms are used for the default scenario, when the speaker expects the hearer to have the answer to the question. However, the form shu should be used for those contexts when speakers do not expect hearers to have the answer. Table 2 presents these contrasts in light of some of the related categories in the language.

<table>
<thead>
<tr>
<th>Tense/Aspect</th>
<th>Expectation of interlocutor knowledge</th>
<th>Unexpected (mirativity)</th>
<th>Evidentiality</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-shang (hearer unexpected to share knowledge)</td>
<td>-na (information unexpected)</td>
<td>-mu (indirect source)</td>
</tr>
<tr>
<td></td>
<td>-pala (hearer not unexpected to share knowledge)</td>
<td>-ta (information unexpected)</td>
<td></td>
</tr>
<tr>
<td>Particles</td>
<td>shu (hearer unexpected to share knowledge)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clitics</td>
<td>=mi (hearer unexpected to share knowledge)</td>
<td></td>
<td>=ri (oral source)</td>
</tr>
<tr>
<td></td>
<td>=wu (hearer expected to share knowledge)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Kurtöp markers of interlocutor expectation in the larger grammar of knowledge context (cf. Hyslop 2014a)

The category of speaker expectation of interlocutor knowledge is a category that is separate from evidentiality or mirativity. These two categories are also present in Kurtöp but are
clearly distinct. Evidentiality is concerned with speaker source of knowledge. In Kurtöp, evidenti-
tials are used to mark that a speaker gained his/her knowledge through inference or through
hearsay. Mirativity is concerned with speaker expectation of knowledge. The Kurtöp mirative is
employed when the speaker or actor reports on knowledge that was unexpected or new to
him/her. The contrast made via the choice of -shang versus -pala, =wu versus =mi and yo or ya
versus shu is different; rather, in choosing between these options, the speaker must take into ac-
count the state of knowledge of the interlocutor. Note that the nuances of use in each of these
contexts is slightly different. In perfective aspect, it appears the primary contrast between
-shang and -pala is one of speaker’s exclusive access to knowledge; expectation of interlocutor
falls out from the contrast. With the questions, the dubiative question particle shu is also used
with rhetorical questions, when an argument can be made that there is no interlocutor at all. It is
perhaps only with the tags that the core and unarguable contrast is made between those contexts
in which the speaker believes the interlocutor shares his/her knowledge and those contexts in
which the speaker believes the knowledge is new to his/her interlocutor.

No doubt speaker expectation of interlocutor knowledge is an integral facet of human
language. As speakers of any language, we take it for granted that we consider where our inter-
locutor is coming from (though some are arguably better than others at this). Surely several
grammatical constructions or intonation patterns come together in any language in order to tend
to speaker expectation of interlocutor knowledge. However, this contrast has been grammatical-
ized in Kurtöp.

Research on “shared” or “common” ground or “territories of knowledge” also addresses
this topic (see e.g. Heritage 2012; Kamio 1994) as does the idea of “epistemic intersubjectivity”
and, to some extent, “multiple perspective” (Evans 2004). Similar phenomena have been report-
ed in unrelated languages, including the Panoan language Kakataibo (Zariquey 2014), the Boliv-
ian isolate Yurakaré (Gipper 2011), and the Papuan language Mee (Niko Kobepa, pc). At
present, I hesitate to introduce a new name for the category until we have more examples from
more languages. Let it suffice for our present purposes to have illustrated the category with some
data from Kurtöp. As more data from more languages become available, no doubt the nature of
the category will become clearer.

8 References

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1 Introduction

Humans are finely attuned to rhythm in many physical domains, from the purely anatomical to the perception of acoustic fluctuations in the speech signal. In fact, humans tend to hear rhythmic patterns even when sequences of sounds are physically indistinct, such as the clicking of a metronome or dripping water (e.g. Bolton 1894, Iversen et al. 2008, Fletcher 2010, Crowhurst and Teodocio 2014). Human languages exhibit rhythmic patterns expressed in the alternation of stressed and unstressed syllables (e.g. Bolton 1894; Halle 1973; Prince 1983; Hayes 1980, 1995, among many others). Researchers have therefore been keenly interested in understanding the perceptual factors that might underlie rhythmic distinctions in the speech domain. One significant body of research has investigated the physical correlates of stressed and unstressed syllables in various languages, and their consequences for the perception of stressed syllables. An early theme in the psychoacoustic research of the late 19th century, now seeing renewed interest, pertains to the perception of natural groupings of sounds. In this paper, we report the outcome of a study that is aligned with research in the second category. We studied the influence of varying vowel duration and glottalization on listeners’ preferred syllable pairings in multisyllabic alternating sequences.

1.1 Rhythmic Grouping and the Iambic-Trochaic Law

Early research on the psychology of grouping produced the two generalizations in (1), now known to phonologists as the Iambic-Trochaic Law, or ITL (Bolton 1894; Woodrow 1909; Hayes 1995).

(1) The Iambic-Trochaic Law (adapted from Hayes 1995)

a. The intensity principle: Elements contrasting in intensity naturally form groupings with initial prominence (trochees).

b. The duration principle: Elements contrasting in duration naturally form groupings with final prominence (iambcs).

Modern experimental studies using both nonspeech and speech-like stimuli have confirmed the intensity principle. Successful experiments using nonspeech stimuli have tested speakers of Japanese (Kusumoto and Moreton 1997; Iversen et al. 2008); English (Rice 1992; Kusumoto and Moreton 1997; Hay and Diehl 2007; Iversen et al. 2008); and French (Hay and
Diehl 2007). The key studies for speech have tested speakers of English (Hay and Diehl 2007; Crowhurst 2013; Crowhurst and Teodocio 2014), French (Hay and Diehl 2007; Bhatara et al. 2013), German (Bhatara et al. 2013), Spanish (Crowhurst 2013), and Zapotec (Crowhurst and Teodocio 2014). While the research of greatest relevance for the work reported here has used a forced choice subjective grouping methodology, Morgan et al (2013), using a serial recall study, found that English speakers were better able to remember a list of six loud and soft syllables organized in trochaic pairs than when they were presented as iambs.

The findings for duration have been more mixed and suggest that the perception of rhythm may be affected by one's native language. Some recent studies have reported a short-long grouping preference for multisyllabic sequences alternating in duration among speakers of English, French, German, Spanish (see references for these languages cited in the last paragraph), and Italian (Bion et al. 2011). Trainor and Adams (2000) report results suggesting that American English speaking adults and eight month olds perceived increased vowel duration as marking ends of short-short-long groupings. Hay and Diehl (2007) also found a short-long grouping preference with English- and French speakers who were tested with alternating non-speech sequences. In contrast, two studies have found grouping biases that conflict with the duration principle in (1b). Japanese speaking participants tasked with grouping duration-varying tonal sequences in Iversen et al. (2008) fell into three groups: one displaying a short-long preference; one with a long-short bias; and the third having no strong preference.1 Among the studies using speech-like stimuli, Crowhurst and Teodocio (2014) found a clear preference for long-short groupings among the Zapotec-speaking participants in their study, when duration was the only parameter manipulated.

While the studies described above have been limited in testing the influence of varying intensity and duration singly, at least three modern studies have tested the joint influence of intensity and duration on grouping. Streeter (1978) found that cues to duration were more important than intensity in signaling prosodic boundaries at the phrasal level. Two more recent subjective grouping studies have found the opposite: when speakers of American English and Spanish (Crowhurst 2013) and speakers of American English and Zapotec (Crowhurst and Teodocio 2014) were tasked with grouping rhythmic multisyllabic sequences in which both intensity and duration were manipulated, the results suggested that intensity was a stronger predictor of listeners' grouping tendencies than was duration. These studies had different goals, however. The focus of Streeter (1978) was in relative salience of cues signaling phrase boundaries. On the other hand, the materials used in Crowhurst (2013) and Crowhurst and Teodocio (2014) (as well as subjective grouping studies described in the previous paragraphs) were meant to simulate binary rhythms that are more characteristic of iterative stress systems.

The conflicting effects found for duration as a predictor of listeners’ grouping behavior, described above, suggest that the effect of a particular acoustic cue on the perception of natural

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1 Similar studies, Kusumoto and Moreton (1997) and Iversen et al. (2008), found no reliable preference for either short-long or long-short groupings among their Japanese-speaking participants.
groupings may be influenced by the listener's native language. At present, however, the reasons for these differences are not well understood. The number of experimental investigations into grouping preferences is limited; in particular, those using speech-like stimuli are small in number. For this reason, we have no detailed typology of speech-related cues that can affect grouping behavior because (to our knowledge) no ITL-style studies with speech have tested the influence of cues other than intensity and duration on the perception of natural groupings. The current investigation contributes to this literature by testing the influence of vowel glottalization on subjective grouping preferences with speakers of American English. The influence of vowel duration was also tested, both singly, and in combination with glottalization. Section 1.2 presents the rationale for the choice of these features. The experiment and its findings are presented in section 2, followed by a discussion of these findings and their implications in section 3.

1.2 Duration and Glottalization in English

In English, duration has been shown to be the most useful cue for the perception of stress (Fry 1955, Gay 1978). Likewise in production, duration is the most reliable cue to stress (Fry 1958, Lehiste 1970, Beckman and Edwards 1994, Campbell and Beckman 1997). Increased duration also has a demarcative function in signaling the end of constituents at all levels of the prosodic hierarchy in English and in many other languages (Gussenhoven and Rietveld 1992, Byrd et al. 2006). This phenomenon of final lengthening may well be associated with the psychoacoustic generalization in (1b).

In American and UK varieties of English, glottalization is also a demarcative feature that can signal endings of at least higher order prosodic constituents (Dilley et al. 1996, Redi and Shattuck-Hufnagel 2001). Glottalization (or laryngealization) can refer to the presence of a glottal stop or to creaky voicing. Creaky voice (also termed vocal fry) occurs when the vocal folds are tensed, or “tightly adducted but open enough along a portion of their length to allow for voicing” (Gordon and Ladefoged 2001:386). The relation between the glottal stop and creaky voice is that the presence of a glottal stop often induces creaky voice on neighboring sounds (Gordon and Ladefoged 2001). This occurs especially when the glottal closure is not complete, and instead the voicing pulses of the vocal folds are interrupted, resulting in creaky voice. Expanding on a previous categorization of glottalization by Huber (1988), Redi and Shattuck-Hufnagel (2001) describe four types, characterized according to their influence on the sound wave in speech: aperiodicity, creak, diplophonia, and glottal squeak. In an examination of glottalization in speakers of American English, Redi and Shattuck-Hufnagel (2001) found considerable variation both in terms of how much glottalization speakers used and in how it was realized. This study also found that in English, glottalization is more likely to occur at “prosodically significant locations such as phrase boundaries, utterance boundaries and pitch accents” (p. 408). American English speakers have been shown to produce more glottalization on word-initial vowels and on vowels with pitch accents (Pierrehumbert 1995), and at prosodic boundaries (Dilley et al. 1996). Glottalization can also be segmentally conditioned, being induced by surrounding glottal stops or final voiceless stops (Gordon and Ladefoged 2001).
As the experimental literature suggests that glottalization and prosody are interrelated, and in particular, that glottalization tends to signal boundaries, it is necessary to conduct further perception experiments to determine the extent to which listeners associate glottalization with finality. The current study contributes to this program of research by investigating whether the presence, and amount, of glottalization affects English speakers’ grouping of syllables.

Given that both duration and glottalization have demarcative functions, and given English speakers tend to perceive longer vowels as group-final in alternating sequences, we asked whether the variations in vowel glottalization would also shape listeners' grouping preferences in a similar way. Our second question was whether one of these demarcative features would emerge as a more robust predictor of grouping preferences, when the two were co-varied in a way that forced listeners to intuitively choose between them.

2 The Experiment

In Experiment 1, native English speakers were exposed to speech streams in which the syllables ba and ga were alternated. Five types of sequence were included in the study. In two of these, a single feature, either vowel duration or vowel glottalization, was systematically varied. In the duration-varying set, length disparities were created by increasing the duration of the vowel in one alternating syllable (ba or ga) relative to that of the other at fixed ratios. In the glottalization-varying set, the vowel of one alternating syllable (ga) had a final period of creakiness. In the remaining sequences, glottalization and duration were both varied in one of two ways. In an in-phase set, the same syllables were marked by increased duration and glottalization: a short, modal syllable ba was alternated with a longer, creakier ga. In an out-of-phase set, a short, creaky ga was alternated with a longer, modal ba. Finally, the stimulus set included a “no difference” control sequence. Study participants were tasked with indicating whether they thought the sequences they heard consisted of recurrent baga or gaba syllable pairings.

2.1 Method

2.1.1 Stimuli

Recordings were made of a male American English speaker producing sequences of #BA-ga-BA-ga... and #GA-ba-GA-ba... (in which capitalization indicates syllables that were emphasized naturally by the speaker). The recording took place in a sound-treated room at the University of Texas at Austin using a Shure close-talking microphone connected to a MOTU (Mark of the Unicorn) solid-state digital recorder. One clear, modal token of ba and one of ga were selected from the weaker position in the recorded sequences. The selected syllables chosen to be as closely matched as possible for pitch (both were between 97 and 101 Hz), intensity, and vowel quality. The vowels in the selected ba and ga syllables measured 217 and 250 ms, respectively.
The selected *ba* and *ga* were manipulated using standard functions in Praat (Boersma and Weenink, 2011) to produce variations in vowel duration and creakiness. Three versions of each syllable were produced, the duration of whose vowels were set to 150 ms, 200 ms, and 300 ms. Variations in duration were produced by copying and inserting, or removing full voicing cycles from the vowel in the original syllable, cutting at zero-crossing lines. Once length adjustments had been made, average intensity for all syllables was set to 65 dB by changing gain.

Glottalized versions of *ga* were created by synthesizing a creaky period at the end of the vowel.² This was done as described in Frazier (2009), by reducing every second pitch point in *ga* to 35 Hz. At level 1, the final 20% of the vowel was creaky, and at level 2, the final 50% was creaky. These proportions were constant, regardless of the absolute duration of the vowel, which also varied in the in-phase and out-of-phase conditions. (The absolute duration of the creaky period of any vowel can be calculated from the information provided in Table 1.) Figures 1 and 2 show the spectrograms for the creaky versions of *ga* whose vowels measured 300 ms.

![Figure 1: Long GA, 20% final creak (level 1)](image1)

![Figure 2: Long GA, 20% final creak (level 2)](image2)

² While Redi and Shattuck-Hufnagel (2001) found aperiodicity to be the most common type of glottalization among the speakers examined, our synthesized creak was periodic. However, a drop in pitch has been found to be a reliable cue to the perception of glottalization (Dilley et al. 1996). Figures 1 and 2 show examples of the long syllables with final creak and half creak. Gerfen and Baker (2005) also found that for speakers of Coatzapan Mixtec, a drop in f0 was a sufficient cue for vowels to be perceived as laryngealized.
The syllables were then arranged into sequences alternating for duration and/or creakiness. Sequences of 10–11 seconds in duration were created by alternating a version of ba and of ga, with a 100 ms period of silence between syllables to simulate stop onsets. Sequences consisted of whole syllable pairs, either baga or gaba, to counterbalance string-initial and string-final syllables. The first 5 seconds of each sequence was combined with white noise that faded out from an amplitude of 63 dB to 0 dB, while the syllables faded in from 0 dB to 65 dB. The end of each sequence was followed by 500 ms of white noise at 65 dB to mask the sequence-final syllable. The design for the study, including the values assigned to the syllables ba and ga in the sequences used, is shown in Table 1. The final column in Table 1 indicates the actual grouping represented by a baga response in each condition.

<table>
<thead>
<tr>
<th>Manipulation levels</th>
<th>ba</th>
<th>ga</th>
<th>baga response =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control (all modal)</td>
<td>D 200</td>
<td>D 200</td>
<td>(ba ga)</td>
</tr>
<tr>
<td>Duration varying (all modal)</td>
<td>D 150</td>
<td>D 300</td>
<td>(ba ga)</td>
</tr>
<tr>
<td></td>
<td>D 300</td>
<td>D 150</td>
<td>(baa ga)</td>
</tr>
<tr>
<td>Creak varying (modal + creaky)</td>
<td>D 200</td>
<td>Cr 1</td>
<td>(ba ga?)</td>
</tr>
<tr>
<td></td>
<td>D 200</td>
<td>Cr 2</td>
<td>(ba ga??)</td>
</tr>
<tr>
<td>In-phase</td>
<td>D 150 x Cr 0</td>
<td>D 300 x Cr 1</td>
<td>(ba ga?)</td>
</tr>
<tr>
<td></td>
<td>D 150 x Cr 0</td>
<td>D 300 x Cr 2</td>
<td>(ba ga??)</td>
</tr>
<tr>
<td>Out-of-phase</td>
<td>D 300 x Cr 0</td>
<td>D 150 x Cr 1</td>
<td>(baa ga?)</td>
</tr>
<tr>
<td></td>
<td>D 300 x Cr 0</td>
<td>D 150 x Cr 2</td>
<td>(baa ga??)</td>
</tr>
</tbody>
</table>

Table 1: Experimental design. Parameters assigned to alternating syllables. (D = duration in ms, Cr = manipulation level for glottalization.)

2.1.2 Participants

The study participants were 24 male and female native speakers of English, aged 18-25, who had not had significant exposure to another language. These were recruited through a University-wide public events newsletter distributed by email, and they received $10 for their time.

2.1.3 Task and Testing Procedure

Participants were tested in groups of 1 to 6 in a sound-treated room in a phonetics laboratory at the University of Texas at Austin. The experiment was controlled by SuperLab 4.0 software running on a MacBook Pro computer. Listeners heard sequences in free field, over a portable Bose SoundLink speaker connected by cable to the computer. Once the experimenter had conducted informed consent procedures and provided initial instructions, a four-trial test run was conducted to ensure that participants understood the task. The sequences were presented in 8 blocks of 12 trials, whose order was randomized by the software each time a block was run. The experimenter was present to manage the software for the duration of the experiment.
were given response sheets containing numbered lines printed with arbitrary sequences of alternating \textit{ba} and \textit{ga} syllables, and were asked to circle or bracket any two adjacent syllables that matched the pairing they heard, either “\textit{baga}” or “\textit{gaba}” for each sequence. In this way we were able to obtain a uniform, indirect measure of listeners’ perceptions regardless of the type of sequence being evaluated and without the need for complicated explanations. They were also instructed to provide a confidence rating by circling “yes” or “no” to the right. A representative response sheet is shown in Appendix A. Including the initial instructions, the experiment took approximately 35 minutes to complete.

2.1.4 Hypotheses

Given that both increased duration and vowel glottalization are associated with demarcation, we hypothesized that when either duration or glottalization was varied singly, the response data would reflect a bias favoring groupings in which the demarcative feature came last (that is, short-long and modal-creaky pairings). Given that the dependent variable measured \textit{baga} responses, and that duration and glottalization were each varied on a 3-point scale, our specific hypotheses were those in (2a) and (2b).

\begin{enumerate}
\item Given that both increased duration and vowel glottalization are associated with demarcation, we hypothesized that when either duration or glottalization was varied singly, the response data would reflect a bias favoring groupings in which the demarcative feature came last (that is, short-long and modal-creaky pairings). Given that the dependent variable measured \textit{baga} responses, and that duration and glottalization were each varied on a 3-point scale, our specific hypotheses were those in (2a) and (2b).

\item In-phase condition
\begin{enumerate}
\item The strength of the bias favoring \textit{baga} groupings will be greater than in the duration-only condition.
\item The strength of the bias favoring \textit{baga} groupings will be greater than in the glottalization-only condition.
\end{enumerate}
\end{enumerate}

In the out-of-phase condition, in which a \textit{baga} response simultaneously represented a long-short and a modal-creaky grouping, the hypotheses in (2a) and (2b) were in competition. We expected that in this condition, one of these hypotheses and not the other would be confirmed, but we had no reason to predict which cue, if any, would dominate.
2.2 Results

2.2.1 The Effect of Varying Duration and Glottalization Singly

As a first step in the analysis, trends in the response data for the control sequences and duration-only sequences (henceforth Set A) were examined. The primary trend in the Set A data is represented in Figure 3 as the proportion of baga responses for points on the duration scale. In the control condition where ba and ga had the same duration, the proportion of baga responses was .41. At manipulation level -1 where ba was shorter than ga, the proportion of baga responses (representing a bagaa grouping) was higher, at .56; and at manipulation level 1 where ba was the longer syllable, the proportion of baga responses (a baaga grouping) was lowest, .37. Both outcomes indicate a bias favoring short-long groupings and together, they confirm the prediction in (2a).

To test the statistical significance of the trend associated with DURATION, a mixed-effects logistic regression model was fitted to the Set A data using the lmer function in the matrix library of the statistical software package R (Urbanek et al. 2012). The binary dependent variable measured the probability of choosing a baga response, which was arbitrarily coded as 1 in the analysis. SUBJECT was treated as a random variable. Consistent with the design in Table 1, DURATION was coded as a 3-point scale (-1, 0, 1), on which 0 represented the "no difference" control condition. Two design variables, BLOCK with 6 levels (one for each experimental block) and ORDER with 2 levels (depending on the string-initial syllable) were treated as factors in the analysis. The process of model selection followed the strategy of forward addition, which begins with a model that includes only the intercept. The model that provided the best fit for the Set A

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3 The response data gathered in the experiment are given in Tables 6, 7, and 8 in Appendix.
data, whose output appears in Table 2, included terms for the intercept and for the predictor DURATION. This model provided a significantly better fit for the data than the intercept-only model, and was the most parsimonious model that optimized goodness of fit. Table 2 indicates that the effect of DURATION was highly significant. The odds ratio (the exponent of the estimated coefficient) provides a measure of effect size. The odds ratio associated with DURATION in Table 2 indicates that baga response was only .73 times as likely (or 27% less likely) per unit increase in the duration of ba relative to that of ga.

| Coef (β) | Odds | SE | z    | P(>|z|) |
|----------|------|----|------|--------|
| INTERCEPT | -0.233 | 0.79 | 0.07 | -3.035 | = 0.002 ** |
| DURATION | -0.315 | 0.73 | 0.07 | -4.491 | < 0.00001 *** |

Table 2: Output of the best-fitting statistical model for the response data in Set A.

To explore the effect of varying glottalization singly, data Set B was prepared by combining response data for the control and glottalization-only sequences (see Table 7 in the Appendix). All vowels had the same duration (200 ms) in this condition. On the three point glottalization scale, level 0 represented a fully modal sequence, 1 represented sequences in which ga ended in a short period of creakiness (gaʔ), and 2 represented a sequence in which the second half of the vowel in ga was creaky, (gaʔʔ) (see Figures 1 and 2). Figure 4 reveals that the proportion of baga responses increased with increases in glottalization, as predicted by the hypothesis in (2b). However, while the presence of a creaky period increases baga responses, the difference between levels 1 and 2 was very small (.58 vs. .61). Pearson’s chi-square test showed that this difference was not significant ($X^2 = 0.443$, df = 1, p = .51).

![Figure 4: Proportion of baga responses in the control (white) and glottalization conditions (Set B).](image)

As before, a mixed-effects logistic regression model was fitted to the Set B response data to test the statistical significance of the trend associated with glottalization. The statistical
The procedures used were as described for Set A with the exception that the predictor variable was now CREAK, treated as a scale with 3 levels (0, 1, 2). The output of the best-fitting model is shown in Table 3.

| Coef (β) | Odds  | SE   | z    | P(>|z|) |
|---------|-------|------|------|---------|
| INTERCEPT | -0.317 | .73  | 0.184 | -1.724  | = 0.0848 |
| scale (CREAK) | 0.469  | 1.60 | 0.090 | 5.244   | < 0.00001*** |

Table 3: Output of the best-fitting statistical model for the response data in Set B.

This model, which included terms for the intercept and for CREAK, provided a significantly better fit for the data than the intercept-only model. No other variable contributed significantly to goodness of fit. The odds ratio associated with CREAK in Table 3 indicates that a baga response was 1.6 times more likely per unit of increase on the glottalization scale, an effect that was highly significant.

2.2.2 The Effect of Varying Duration and Glottalization Together

In the remaining two conditions, duration and glottalization were co-varied in the same sequences. In the in-phase sequences, a short, modal ba alternated with a longer, creakier ga (i.e. gaaʔ or gaaʔʔ). In the out-of-phase sequences, a long, modal ba (or baa) alternated with a short, creakier ga (i.e. gaʔ or gaʔʔ). The response data for these conditions occupy Table 8 in Appendix B.

We expected that in the in-phase condition, the proportion of baga responses would be higher than when either duration or glottalization was varied singly (see the hypotheses in 3a and 3b). However in the in-phase condition, a baga response represented both a short-long and a modal-creaky grouping. Should our prediction be confirmed, we were therefore also interested to know the relative contributions of duration and glottalization to the observed outcome. To examine these issues, data Set C was assembled from the response data for the duration-only subcondition in which ga was the longer syllable (manipulation level 1 in Figure 3), the glottalization-only condition, and the in-phase condition. The Set C results are charted in Figure 5. Labels beneath columns in the graph indicate properties of the groupings represented by a baga response in each condition and subcondition (“7” represents glottalization in Figures 5-7). In the comparison between bagaa (the duration-only sequence, white column) vs. bagaʔ and bagaʔʔ (the glottalization-only sequences, light grey), the chart reveals that a glottalization disparity produced more baga groupings than did a duration disparity. When ga was long, the proportion of baga responses was indeed higher when it was also creaky (dark grey columns) than when it was fully modal (the white column). And when ga was creaky, adding length (dark grey) increased baga responses in comparison to the glottalization-only condition (light grey), in which ga was short. However, consistent with the finding for the glottalization-only condition, the difference between the two in-phase subconditions was very small (proportion baga = .66, vs. .68). Again, Pearson’s chi-square test revealed that this difference did not reach significance.
\(X^2 = 0.225, df = 1, p = 635\). Overall, Figure 5 reveals that our hypotheses in (3a) and (3b) were confirmed by the response data.

![Proportion of baga responses in Set C.](image)

Figure 5: Proportion of *baga* responses in Set C. (White: duration-varying with long *ga*; Light grey: glottalization-only; Dark grey: in-phase)

The significance of any trends associated with duration and glottalization in the Set C data was tested using the procedures described for Sets A and B. As before, SUBJECT was treated as a random variable and the design variables ORDER and BLOCK were coded as factors. The predictor variables were CREAK coded as a 3 level scale (0-2), and GA.DURATION with two levels (0, 1), determined by the length of the syllable *ga*. The output of the best-fitting model is shown in Table 4. This model, which included terms for the intercept and both predictor variables, provided a significantly better fit for the data than models without either GA.DURATION or CREAK. Neither design variable contributed significantly to goodness of fit.

|             | Coef (\(\beta\)) | Odds | SE  | z     | P(>|z|) |
|-------------|------------------|------|-----|-------|---------|
| INTERCEPT   | 0.379            | 1.46 | 0.183| 2.072 | = 0.0382* |
| GA.DURATION | 0.298            | 1.35 | 0.124| 2.400 | = 0.0164* |
| scale (CREAK)| 0.120           | 1.13 | 0.061| 3.275 | = 0.0011** |

Table 4: Output of the best-fitting statistical model for the response data in Set C.

The statistical analysis revealed that the fixed effect of GA.DURATION was significant and that the effect of CREAK was highly significant. In other words, glottalization and duration did not contribute in equal proportion to increases in *baga* responses, a finding that is evident on close inspection of Figure 5 (in the comparison between the conditions represented by the white and light grey columns). We interpret this to mean that of the two features, glottalization was the stronger predictor of listeners’ grouping biases. This interpretation is supported by the odds ratios associated with the terms GA.DURATION and CREAK.
Turning to the out-of-phase sequences, glottalization and increased duration were marked on different syllables in this condition, and for this reason, our specific hypotheses in (2a) and (2b) were in competition. The question of interest was whether one of these cues would prove to be a more reliable predictor of RESPONSE than the other. To explore trends related to the out-of-phase sequences, data Set D, was constructed from the response data for the duration-only subcondition in which ba was the longer syllable (manipulation level -1 in Figure 3), the glottalization-only condition, and the out-of-phase condition. The Set D results are charted in Figure 6. Here we see that the proportion of baga responses is highest in the glottalization-only condition, represented by the light grey columns. Baga responses were greatly decreased in all conditions in which ba was long. Informally, it appears that making the modal syllable longer washed out the influence of glottalization observed when no duration disparity was present.

The Set D data was submitted to the same statistical analysis as described for Set C, with the exception that GA.DURATION was replaced with BA.DURATION. The best-fitting logistic model for the data as a whole was the model that contained only the intercept term (significant; coefficient = -0.4645, Odds = 0.63, SE = 0.163, z = -2.845, p(>|z|) = 0.0044). No other variable (whether predictor or design) contributed significantly to the model. The fact that the fixed effects of CREAK and BA.DURATION were not significant is consistent with our interpretation that they “cancelled one another out” in the out-of-phase condition.

To study the effect of glottalization in the conditions where ba was long, a data set (Set E) was constructed by removing the response data for the glottalization-only condition (light grey) from Set D, leaving only the response data for the conditions represented by the white and dark grey columns in Figure 6. The best-fitting model for the Set E data set was again the one that included only the intercept term (significant; coefficient = -0.640, Odds = 0.53, SE = 0.298, z = -2.148, p(>|z|) = 0.0317). Pairwise tests (Pearson’s Chi-square) indicated that there was no significant difference between the baaga, baagaʔ, and baagaʔʔ conditions being compared.
other words, when *ba* was long, increasing glottalization on *ga* (from *ga* to *gaʔ* or *gaʔʔ*) did not significantly increase *baga* groupings, even though a weak trend seems to be evident in Figure 6.

To study effect of lengthening *ba* in the conditions where *ga* was creaky, the data for the glottalization-only (light grey) and out-of-phase (dark grey) conditions were combined and submitted to the same statistical test as was used for Sets A-E, with BA.DURATION as the predictor variable. Table 5, which contains the output of the best-fitting model, reveals that the effect of duration was highly significant: adding length to modal *ba* when *ga* was creaky lowered the odds of a modal-creaky grouping by 56%.

| Coef (β) | Odds | SE  | z     | P(>|z|)   |
|----------|------|-----|-------|-----------|
| INTERCEPT| 0.424| 1.53| 0.143 | 2.965     | = 0.003** |
| BA.DURATION| -0.818| .44 | 0.124 | -6.951    | < 0.00001*** |

Table 5: Output of the best-fitting statistical model for the response data in Set C.

Finally, the outcomes for sequences in the same glottalization classes are shown in Figure 7. Pairwise tests (Pearson’s chi-square) indicated that the difference between the glottalization-only and out-of-phase conditions was significant at both manipulation levels (*bagaʔ* vs. *baagaʔ*: $X^2 = 19.812$, df = 1, *p* < 0.00001; *bagaʔʔ* vs. *baagaʔʔ*: $X^2 = 19.257$, df = 1, *p* < 0.00001). However, there were no significant differences between the glottalization-only and in-phase conditions, although the difference between *bagaʔ* vs. *bagaaʔ* approached significance (*bagaʔ* vs. *bagaaʔ*: $X^2 = 3.287$, df = 1, *p* = 0.06981; *bagaʔʔ* vs. *bagaaʔʔ*: $X^2 = 2.659$, df = 1, *p* = 0.103).

![Figure 7. Proportion of *baga* responses for glottalized sequences. (White = glottalization only; light grey = out-of-phase; dark grey = in-phase)](image)

These findings are interpreted in the discussion, which follows in section 3.
3 Discussion

In this study, we studied the perceptual influence of phonetic cues to duration and glottalization on English-speaking listeners’ judgments of natural syllable grouping. The technique we used was to introduce systematic disparities in the duration and/or creakiness of the vowels in streams of recurrently alternating syllables, *ba* and *ga*. Our results indicate that disparities in duration produce the perception of short-long groupings, and disparities in glottalization produce the perception of modal-creaky groupings, as compared with a baseline condition in which neither feature was varied. These effects were highly significant in conditions in which these cues were varied singly. We further expected that when the duration of the glottalized period was increased, participants would be even more likely to choose groupings where the creaky syllable was in final position. While the data indicated a small trend in this direction, it did not reach significance in any condition in which glottalization was manipulated.

Our design included two conditions in which disparities in glottalization and duration were introduced into the same sequences. Sequences for an in-phase condition were prepared so that increased duration and glottalization marked the same syllable. In the case of the In-phase sequences, a recurrent short-long parse was also a modal-creaky parse, and the statistical analysis revealed a significant preference for this grouping. In this condition, the contributions of duration and glottalization seemed to be additive. Interpreting that statistical comparison of the outcomes in the In-phase, glottalization-only, the duration-varying condition in which *ga* was long but not glottal (see Figure 5), we found that adding glottalization to a long modal syllable significantly increased short-long groupings and that adding length to a creaky syllable also increased modal-creaky groupings. While both effects were statistically significant, the effect of glottalization was stronger.

The finding that glottalization may have contributed more to listeners' grouping decisions in the In-phase condition is in light of our findings for the second co-varied condition, in which duration and glottalization were manipulated ‘out of phase’. In this condition, a short creaky syllable alternated with a long, modal one. The trends observed in the other conditions can be interpreted as indicating that the listeners preferred groupings in which the syllable with the demarcative feature came last. However, in the out-of-phase condition, these two grouping strategies were in competition: a short-long parse of an out-of-phase sequence was simultaneous a glottal-modal parse (and conversely, a modal-glottal parse was a long-short parse). A comparison between all conditions in which glottalization was manipulated indicated that adding length to the modal syllable significantly reduced modal-creaky grouping decisions, or increased short-long groupings. Interpreting the findings associated with co-varying glottalization and duration, it seems that when the two cues were working together in-phase, their contributions were additive, with glottalization contributing more. However, when the two cues were working against one another (out-of-phase), duration seems to have had a significant cancelling-out effect. Adding glottalization did not significantly increase modal-creaky grouping decisions when the modal syllable was long.
Summing up, our findings suggest at least two general outcomes that should be of interest for students of rhythm. The first is that vowel glottalization, a feature that has not been previously studied in a rhythmic context, tends to be heard as group-final. Glottalization has a demarcative function similar to that observed for duration, and the English-speaking listeners in our study used it similarly in judging natural syllable groupings. When both features are varied singly, the listeners in our study preferred groupings in which the syllable with the demarcative feature came last. The second finding of interest was that listeners seemed to use duration cues differently, depending on how duration was varied with another feature, in this case, glottalization. Interpreting our findings, in both of our co-varied conditions, increasing a duration disparity strengthened listeners’ perception of short-long syllable groupings. However, the effect of duration was much stronger when it worked against glottalization than when the two features worked together. These discoveries indicate that much can be learned from extending the study of rhythmic grouping preferences to include acoustic features other than intensity and duration, and from exploring the relative contributions of these features by testing more complex feature combinations.

4 References


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**Appendix A: Example of a response sheet**

**Block 1**

1. … ba (ga ba) ga ba … How sure? yes no
2. … ga ba ga (ba ga) ba … How sure? yes no
3. … ga ba ga ba ga … How sure? yes no
4. … ba ga ba ga … How sure? yes no
5. … ba ga ba ga ba ga … How sure? yes no
6. … ga ba ga ba … How sure? yes no
7. … ba ga ba ga ba … How sure? yes no
8. … ga ba ga ba ga ba … How sure? yes no
9. … ga ba ga ba ga … How sure? yes no
10. … ba ga ba ga ba … How sure? yes no
11. … ba ga ba ga ba ga … How sure? yes no
12. … ga ba ga ba … How sure? yes no
### Table 6: Response data for control and duration-only sequences (Set A).

<table>
<thead>
<tr>
<th></th>
<th>-1</th>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>bag</td>
<td>159 (.56)</td>
<td>117 (.41)</td>
<td>106 (.37)</td>
</tr>
<tr>
<td>a</td>
<td>127 (.44)</td>
<td>171 (.59)</td>
<td>181 (.63)</td>
</tr>
</tbody>
</table>

The scale reflects the duration of *ba* relative to *ga*.

### Table 7: Response data for control and glottalization-only sequences (Set B). The scale reflects increases in the glottal quality of *ga* (0 = *ga*, 1 = *gaʔ*, 2 = *gaʔʔ*).

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>bag</td>
<td>117 (.41)</td>
<td>166 (.58)</td>
<td>176 (.61)</td>
</tr>
<tr>
<td>a</td>
<td>171 (.59)</td>
<td>119 (.42)</td>
<td>111 (.39)</td>
</tr>
</tbody>
</table>

### Table 8: Response data for in-phase sequences (included in Set C) and out-of-phase sequences (included in Set D). Column headings indicate properties of groupings represented by a baga response.

<table>
<thead>
<tr>
<th>In-phase</th>
<th>Out-of phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>bagaaʔ</td>
<td>bagaaʔʔ</td>
</tr>
<tr>
<td>baagaʔ</td>
<td>baagaʔʔ</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>bagaaʔ</th>
<th>bagaaʔʔ</th>
<th>baagaʔ</th>
<th>baagaʔʔ</th>
</tr>
</thead>
<tbody>
<tr>
<td>bag</td>
<td>188 (.66)</td>
<td>195 (.68)</td>
<td>111 (.39)</td>
<td>122 (.43)</td>
</tr>
<tr>
<td>a</td>
<td>97 (.34)</td>
<td>91 (.32)</td>
<td>172 (.61)</td>
<td>164 (.57)</td>
</tr>
</tbody>
</table>
The Syntax of Tone in Guinean Kpelle

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1

1 Introduction

A major question challenging linguists who study the interaction between phonology and syntax is whether prosodic structure is organized as a syntax independent module of grammar with its own structure or whether there is one-to-one correspondence between prosody and syntax. In recent years linguists have devised many theories addressing the issue, such as The Prosodic Hierarchy Theory (Selkirk 1980; Nespor and Vogel 1986 etc.), the Minimal Indirect Reference Model (Seidl 2001), Multiple Spell-Out Theory proposed by Dobashy (2003) and Ishihara (2003), Feature-chain Mapping Analysis presented by Elordieta (1997), the Match Theory of prosody-syntax interface (Selkirk 2009) – cf. Elordieta (2007) and Selkirk (2011) for up-to-date references. Unfortunately, most current studies of the phonology-syntax interface are based on rather limited typological sample. Concerning African languages, it is mostly Bantu languages that are discussed in literature – cf. (Downing 2013) for an overview.

In this paper I study the interaction between prosodic and syntactic structure in Guinean Kpelle (GK), an underdescribed Southwestern Mande tonal language spoken in West Africa, Republic of Guinea. My syntactic approach to GK is largely based on Nikitina’s (2009, 2011) analysis of the Wan language. In this paper I focus on surface changes of tone in GK (the ʁɔ̃kwɛ́lɛ́ dialect). I argue that tone rules in GK are strongly sensitive to morphosyntactic structure, and in most cases prosodic structure can be derived from syntactic structure in this language. In other words, GK gives evidence of a strong syntax-phonology correspondence supporting the “Match” model of phonology-syntax interface as argued in Selkirk (2009, 2011).

To my knowledge, Mande languages have never been discussed with respect to the phonology-syntax interface before. In this article I am going to introduce some new empirical data which might contribute to our understanding of the interaction between phonology and syntax.

1 This paper is written with financial support from the Russian Science Foundation, project 14-18-03270 “Word order typology, communication-syntax interface, and information structure in languages of the world”. I am grateful to Valentin Vydrin (INALCO, Paris) and Larry Hyman (University of California, Berkeley) for their helpful criticism throughout my work on tone in Kpelle. I would also like to express my sincere gratitude to Davide Lama, Fassou Bienvenu Loua, and Jacques Achille Théa who became my language consultants – and friends.

2 Abbreviations: B – basic series; CONJ – conjugate auxiliary; DEF – definite; GK – Guinean Kpelle; H – high tone; (H) – floating high tone; HAB – habitual; L – low tone; NEG – negative; NF – non-finite form; P – positive; PL – plural; PST – past; RES – resultative; SG – singular; STAT – stative marker. I follow African phonetic alphabet writing conventions in the paper: j stands for [dʒ], y stands for [j]. Tones are marked on all vowels including word-final ŋ. Underlying tones are marked in the examples unless noted otherwise.
GK is spoken by ca 460 000 speakers (Lewis et al. 2014) in the Republic of Guinea. Its grammatical descriptions can be found in Casthelain (1952) and Lassort (1952); there is also a large dictionary by Leger (1975). Unfortunately, tones are not marked in these sources. William Welmers described the phonology of Liberian Kpelle including its tone system (Welmers 1962). A preliminary comparative description of tone systems in Kpelle dialects can be found in Konoshenko (2008). The data presented in this paper were collected during my field trips to Nzerekore, Guinea (2008, 2009), and also during a number of sessions with Kpelle speakers in Berkeley (2010) and Moscow (2012).

The paper is organized as follows. In section 1 I discuss some crucial syntactic properties of Mande languages including GK. Section 2 is dedicated to tonal inventory in GK. In section 3 I introduce tone rules in GK and describe the interaction between tone and syntax in the language. Section 4 concludes the paper.

1 Some syntactic properties of Mande languages

Mande languages have a cluster of unusual syntactic properties which are not typical for neighboring or related languages. These properties include strict SAuxOVX word order (Dryer and Gensler 2005; Creissels 2005; Nikitina 2009), clause-external postpositional phrases (Nikitina 2008), formally identical transitive and possessive constructions (Innes 1967), and the absence of double-object constructions (Creissels 2005). I would like to focus on the first two properties which are crucial for my analysis of tone in GK.

1.1 Strict SAuxOVX order

Mande languages have extremely rigid SAuxOVX word order. Subjects and direct objects always precede the verb, and all other arguments and adjuncts follow the verb. In the vast majority of TAM constructions in Mande the subject is followed by an auxiliary-like element encoding tense-aspect, mood, and polarity, but also person and number in some languages including GK. This auxiliary-like element is called “predicative marker” in literature on Mande, I follow this terminology here.

In the following example (1) from GK subject and direct object are expressed before the verb whereas the oblique argument appears after the verb and is expressed by a postpositional phrase.

GK (Southwestern Mande; personal field notes)

(1) Zilènû àá wálî tɛ̀ɣɛ̌ nɛ̀ɛ̀nû pò.
   zilènû àá wálî tɛ̀ɣɛ̌ nɛ̀ɛ̀nû pò
   DEF\man 3SG.RES.P money  give DEF\woman to
   ‘The man gave the money to the woman’.
In (1) the predicative marker àǎ expresses resultative aspect, positive polarity, and third person singular. Historically, elements marking subject person and number appeared after subject pronouns had fused with “bare” predicative markers and were then reanalyzed as agreement markers (Vydrin 2010, 2012a; Konoshenko 2013). Also, there may be no subject noun phrase in a clause in GK, in this case the predicative marker encoding person and number has anaphoric interpretation. So GK is a pro-drop language. Not all Mande languages have predicative markers encoding person and number, and only some of them have the pro-drop feature but this difference is not very important for the present discussion.

As in Mande in general, in GK a direct object must be overt in a transitive clause. If there is no direct object, a clause is automatically interpreted as intransitive. In (2) from GK there is a direct object expressed by a pronoun dǐ. In (3) there is no direct object, and the clause is interpreted as intransitive (with a minor semantic shift: ‘to see’ → ‘to be found’).

(2) Pépèè àǎ dǐ káá làà.
    Pépèè  àǎ  dǐ  káá  làà
    Pepe 3SG.RES.P they see there
    ‘Pepe saw them there’.

(3) Pépèè àǎ káá làà.
    Pépèè  àǎ  káá  làà
    Pepe 3SG.RES.P see there
    ‘Pepe was found there’.

Transitive vs. intransitive alternation is not morphologically marked on the verb. Thus (2) and (3) are instances of passive lability which is highly regular in Mande languages being at the same time a typological rarum (Letučij 2006).

1.2 Clause-external postpositional phrases

Recall from (1) that oblique arguments always follow the verb in GK and in Mande in general. Here I follow Nikitina (2009, 2011), who argues on the bases of Wan, a Southeastern Mande language, that in Mande, while direct objects always appear inside the verb phrase, oblique arguments always following the verb never form a syntactic constituent with it. Instead, they appear outside the verb phrase. Nikitina’s crucial evidence comes from constructions with embedded verb phrases. I illustrate her point with some data from GK below. Consider (4-5):

(4) Gwìî káá gwèllólù hù.
    gwìî  káá  gwèllólù  hù
‘The banana is in the pot’.

(5) Pépèè wɛ́lí káá Héní ɓà.

Pépèè love be Heni on

‘Heni loves Pepe’, lit. ‘Pepe’s love is on Heni’.

In (4) a simple locative construction with the verb káá ‘be’ and a postpositional phrase is given. In (5) the same construction is used metaphorically to denote one’s love for someone. Here the head of the noun phrase is a relational noun wɛ́lí ‘love’, and its dependent Pépèè denotes the stimulus. The experiencer is expressed by the postpositional phrase Héní ɓà.

The examples below show that an embedded verb can also appear as a dependent of the relational noun.

(6) Kónóŋ míǐ wɛ́lí káá Héní ɓà.

food eat love be Heni on

‘Heni loves eating (food)’.

(7) Wáli tɛ̀ɣɛ̌ wɛ́lí káá Héní ɓà núâ pó.

money give love be Heni on person.PL to

‘Heni loves giving money to people’.

In (6) a transitive verb míǐ ‘eat’ is embedded into the noun phrase, its direct object kónóŋ ‘food’ precedes the embedded verb, and the head noun wɛ́lí ‘love’ follows the whole embedded verb phrase. In (7) the embedded verb tɛ̀ɣɛ̌ ‘give’ has a direct object wáli ‘money’ and a postpositional argument denoting the recipient núâ pó ‘to people’. Crucially, the postpositional phrase is not adjacent to the embedded verb, nor does it immediately follow to the noun phrase; it follows the postpositional phrase Héní ɓà ‘on Heni’ selected by the verb káá ‘be’.

The data from GK suggest that postpositional phrases are not part of the verb phrase in these languages, rather they are independent constituents which follow the verb phrase.

The syntactic structure of a clause with a postpositional phrase in Mande and, specifically, in Kpelle is captured by the tree in (8) – cf. Nikitina (2009:920-921) for details and refinements. As noted in 1.1, GK is a pro-drop language, i.e. subject noun phrase may be absent in a clause so it is put in parentheses in (8).
Finally, to give the reader a more complete idea of Mande clause structure, I must note that there are three possible slots for adverbial modifiers in Mande.

First, adverbs appear after the verb phrase either following or preceding postpositional phrases as in (9ab) from GK. Second, an adverbial modifier can appear in sentence-initial topic position (9c) but I do not discuss such cases in this paper.

(9a) ŋã hwàà Héní bà kèlèkèlè.
   1SG.HAB.P speak\HAB Heni on often
   ‘I often scold Heni’.

(9b) = ŋã hwàà kèlèkèlè Héní bà

(9c) = kèlèkèlè ŋã hwàà Héní bà

Adverbial lexemes usually differ in their distribution depending on their form and semantics in a given language. In some languages including GK, a closed list of temporal adverbs can appear between the auxiliary and the verb:

(10) Pépèè è wéí pà.
    [Pépèè]_{NP} [è] [[wéí]_{AdvP} [pà]_{VP}].
    Pepe 3SG.B.P yesterday come\PST
    ‘Pepe came yesterday’.

We can now modify the tree in (8) by adding the positions for adverbial modifiers – cf. (11)³:

---
³ In Mande languages, e.g. Bambara, some adverbs appear between direct object and verb (Vydrin 2012b) but this seems to be a specific feature not attested in other groups in Mande family.
2 Tonal inventory in Guinean Kpelle

In this section I give basic information on the tonal inventory at the word level in GK (the hɔɔkwɛlɛ dialect). I also discuss the difference between lexical and morphological tones in the language.

As seen in (12a), there is a H vs. L contrast in GK.

(12a) báá ‘to kill me’

(12b) bàǎ ‘to kill him’

The two tonal elements H and L make up six fixed lexical patterns, or melodies: /H/, /L(H)/, /LHL/, /HLH/, /L/, and marginal /LH/. In this paper I will adopt the convention of representing tonal melodies in slashes: the /H/ melody. Tonal elements are written without brackets: H tone. (H) represents a floating H, which always follows a linked L in a /L(H)/ melody. It is marked with a haček on the vowel or word-final ŋ: pàǎ ‘to kill’; hòŋ̌ ‘to catch’.

Phonetically, /L(H)/ is realized as low level tone – I mark it as [L°] in the phonetic transcription. For the sake of clarity, the conventions for /L(H)/ are represented in (13):

(13) Underlying: /paa/ Orthographic: pàǎ Phonetic: [pà̀a˚] (level L) |
L H

The /L(H)/ vs. /L/ contrast is neutralized before H tone: gbônɔ káą [gbônɔ́ káą] ‘see a trap’; gbônɔ káą [gbônɔ̃ káą] ‘see a ring’. The two melodies are contrasted, however, before a pause (or in isolation) and when followed by L tone. In the former case, /L(H)/ is realized as low level tone [L°], whereas /L/ sounds as low falling tone: gbônɔ [gbônɔ̃] ‘trap’ vs. gbônɔ [gbônɔ]
‘ring’. In the latter case, /L(H)/ is pronounced [LH] with (H) linked to the last syllable of its TBU (cf. Rule 4 in 3.4) whereas /L/ sounds as low level tone: gbônô hwèélë [gbônô hwèélë°] ‘two traps’ vs. gbônô hwèélë [gbônô hwèélë°] ‘two rings’.

The TBU of the melodies is the phonological foot: CV, CVη, CVVη, CVCV, CVCVV, CVCVη, and CVCVVη. Judging by the distribution of segments and tones on different feet, CV is monosyllabic since it never bears /LHL/ and /LH/ melodies. /L(H)/ is, however, possible on CV: dì ‘they’; mú ‘underside of an object’. /HL/ can only appear as contextual on CV. The other feet are bisyllabic with the first syllable being always monomoraic (CV-V; CV-Vη; CV-CV etc.). The most frequent structures in the dictionary are CVV, CVCV, and CVCVη. Other structures are also attested, i.e. CVVC, CVVCCV, CVCCCV: hwèélë ‘two’, hààbà ‘three’, tèèhwèè ‘plain’, hwèèlàà ‘thin’, ìlìhì ‘devil’, ìbìli ‘fetish’ etc. Such items reveal fewer combinatorial restrictions on tones and segments, and I analyze them as containing two or three feet.

/H/ melody is realized as H-L on CVV structure: kwìì ‘night’, and as H-HL on CVCV: yìlë ‘dog’.

GK is strongly isolating, so the phonological foot most often corresponds to morpheme and also to lexeme or word in this language.

Some examples with tonal melodies are given in Table 1.

<table>
<thead>
<tr>
<th>Tonal Pattern</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>/H/</td>
<td>bá ‘rice’, káá ‘see’, bówá ‘knife’, talááj ‘slip’</td>
</tr>
<tr>
<td>/L(H)/</td>
<td>dì ‘they’, pàá ‘to kill’, yàlà ‘lion’ kwènèè ‘eggplant’</td>
</tr>
<tr>
<td>/HL/</td>
<td>kwìì ‘night’, yìlë ‘dog’, gbàmàà ‘fusil’</td>
</tr>
<tr>
<td>/LHL/</td>
<td>pàá ‘lizard sp.’, làñ ‘to jump’, kòòñj ‘try’, yòwá ‘axe’</td>
</tr>
<tr>
<td>/L/</td>
<td>hu ‘in’, bòòñò ‘mouse sp.’, kpèlèè ‘Kpelle’</td>
</tr>
<tr>
<td>/LH/</td>
<td>gòhó ‘cribble’, kpèèñj ‘cowrie’, màmàñj ‘manioc’</td>
</tr>
</tbody>
</table>

As noted above, /LH/ is marginal. It is only attested on non-relational nouns, and it never undergoes any phonological changes of tone since it never appears in those contexts where lexical tones on nouns may change (head of NP encoding inalienable possession).

Verbs and relational nouns can only have lexical /H/, /L(H)/, /HL/, and /LHL/. However, verbs in some TAM constructions and head nouns in some types of noun phrases are morphologically marked with /L/. In this case lexical tones of the word are suppressed by morphologically assigned /L/ – cf. the term “replacive tone” in Welmers (1973:132). For example, in a stative construction the verb kòlñj ‘know’ appears with its lexical /H/ melody (14), whereas in the aorist construction it is /L/-marked (15).

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4 Bimorphemic feet with grammatical suffixes are also possible, e.g. in nominalized verb forms: yélé-i laugh-NF ‘laughing’.

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(14) ⱡé Pépèè kólój.

ŋé  Pépèè  kólój
1SG.B.P   Pepe  know
‘I know Pepe’.

(15) ⱡé Pépèè kólój.

ŋé  Pépèè  kólój
1SG.B.P   Pepe  know\pST
‘I used to know Pepe’.

It is important to note that, like lexical melodies, morphologically assigned melodies may, in their turn, undergo purely phonological changes discussed in the following subsections. This is captured in (16): at Step 1 a word may change its lexical melody to morphological melody if required by grammatical construction; at Step 2 the resulting melody becomes an input for phonological changes.

(16)

Lexical melody
↓
Morphological melody
↓
Phonological rules

A notable difference between Step 1 and Step 2 is that at Step 1 the lexical melody is completely deleted and replaced by morphological melody, whereas at Step 2 the underlying tone leaves some traces at the surface level.

In the remainder of this paper I do not distinguish between lexical and morphological tonal melodies and I call both phenomena underlying, or input, melodies because they function identically as input for phonological rules. I use the term “tone rule” to denote phonological, or assimilatory, rules. In the examples below underlying melodies are given in slashes, and surface melodies are put in square brackets.

3  Tone rules and syntax in GK

In this section I discuss the tone rules in GK. I show that these rules are strongly conditioned by syntactic structure in the language though some instances of syntax-independent prosodic phrasing are also attested.

There are four major tone rules in GK: H tone spread on /L/, H tone spread on /L(H)/, contour simplification, and regressive linking of (H). Note that there is no H spread onto /LHL/.
The domain of the first two rules is a syntactic constituent, the domain of the second pair of rules is clause. These rules are discussed in subsections 3.1-3.4.

3.1 Rule 1: H tone spread on /L/

H tone, either linked or floating, spreads on the following /L/ melody which becomes [HL]. This is formalized in (17) and illustrated in (18-20):

\[(17) \quad /L/ \rightarrow [HL] / H_\text{—}\]

\[(18) \quad /\text{ɓɛ́ láá kàà}/ \rightarrow [\text{ɓɛ́ láá kàà}] \quad \text{‘saw a sheep’} \quad /H/ + /L/ \rightarrow [H] + [HL] \]

\[(19) \quad /\text{ɓòlú kàà}/ \rightarrow [\text{ɓòlú kàà}] \quad \text{‘saw a goat’} \quad /L(\text{H})/ + /L/ \rightarrow [L] + [HL] \]

\[(20) \quad /\text{ɲàlàlè kàà}/ \rightarrow [\text{ɲàlàlè kàà}] \quad \text{‘saw a cat’} \quad /L/ + /L/ \rightarrow [L] + [L] \]

Underlying /L/ melody becomes surface [HL] on the verb kàà after ɓɛ́láá with /H/ in (18) and after ɓòlú with /L(H)/ in (19). There is no change in (20), as it shows a combination of two /L/ melodies.

This rule applies within phonological phrases corresponding to syntactic constituents: the verb phrase [NP_{OBJ} V]_VP as in (18-19), the noun phrase [NP_{GEN} N]_NP expressing non-anchoring relationship – in a sense of Koptievskaya-Tamm (2006), where the head noun is marked with /L/ as in (21), and the postpositional phrase [NP P]_PP – cf. (22).

\[(21) \quad /\text{kwíí wòò}/ \rightarrow [\text{kwíí wóò}] \quad \text{‘the French language’ (lit. ‘language of white people’)} \]

\[(22) \quad /\text{ɓɛ́ láá mû}/ \rightarrow [\text{ɓɛ́ láá mû}] \quad \text{‘under a sheep’} \]

In all the cases represented above it is the syntactic head that undergoes the change – V, N, or P. The dependent phrase can contain a single word as in (18-19; 21-22), or it may branch as in (23).

\[(23) \quad /\text{ŋé Pépèè kòyó kàà}/ \rightarrow [\text{ŋé Pépèè kòyó kàà}] \]

\[\text{ŋé} \quad [\text{Pépèè}]_{NP} \quad \text{kòyó} \quad [\text{kàà}]_{NP} \quad \text{kàà} \]

1SG.B.P. Pepe leg see\text{PST}

‘I saw Pepe’s leg’.

Interestingly, Rule 1 always applies between an auxiliary and a verb without direct object though, apparently, they do not form a syntactic constituent:
Moreover, H tone spreads from an adverb to a verb when the former immediately precedes the non-branching verb phrase – cf. the tree in (11):

(25) /ká wéí pà/ → [ká wéí pà] ‘you (pl.) came yesterday’
(26) /ŋé kélèě pà/ → [ŋé kélèè pà] ‘I came today’

Non-branching verb phrase thus turns out to be accessible for H tone spread from an auxiliary as well as an adverb. In other words, both an auxiliary and an adverb appear to form phonological phrases with the verb which do not correspond to syntactic structure. This is one of few instances of prosody-syntax discrepancy I have discovered in GK so far. This is why it is not unreasonable to postulate separate phonological and syntactic phrases in GK which, however, correspond to each other to a large extent.

Crucially, however, H spread on /L/ never occurs between subject noun phrase and auxiliary (27), between auxiliary and object noun phrase (28), between verb and postpositional phrase (29) or adverbial modifier (30). The relevant pairs of syntactic elements are underlined in the examples below.

(27) /é lóŋ́ è ṃáálèè hèvè/ → [é lóŋ́ è ṃáálèè hèvè]; *[é lóŋ́ è ṃáálèè hèvè]
[é lóŋ́]_NP  è  [ṁáálèè hèvè]_VP  2SG child 3SG.B.P cat take\PST
‘Your child took a cat’.

(28) /Pépèè ǎ kɔ́yɔ́ hèvè/ → [Pépèè ǎ kɔ́yɔ́ hèvè]; *[Pépèè ǎ kɔ́yɔ́ hèvè]
[Pépèè]_NP  ǎ   [kɔ́yɔ́ hèvè]_VP  Pepe 3SG.HAB.P calabash take\PST
‘Pepe takes a calabash (usually)’.

(29) /ŋàá ṃáálèè káá kpɔ́yɔ́ hù/ → [ŋàá ṃáálèè káá kpɔ́yɔ́ hù]; *[ŋàá ṃáálèè káá kpɔ́yɔ́ hù]
[[ŋàá  ṃáálèè káá]_VP  kpɔ́yɔ́ hù]_PP
1SG.HAB.P cat see box in ‘I saw a cat in a box’.

(30) /ŋàá ṃáálèè káá làà/ → [ŋàá ṃáálèè káá làà]; *[ŋàá ṃáálèè káá làà]
[[ŋàá  ṃáálèè káá]_VP  làà]_AdvP
1SG.HAB.P cat see there
3.2 Rule 2: H tone spread on /L(H)/

Similarly to Rule 1, linked or floating H tone spreads on /L(H)/. The applicability of the rule as well as the resulting melody, however, depend on the syntactic environment where the tonal combination in question occurs.

H can spread on the verb bearing /L(H)/ in the verb phrase [NP OBJ V]_VP. The resulting melody is /H/:

(31) /L(H)/ → [H] / H_
(32) /béláá hɛ́yɛ́ → [béláá hɛ́yɛ́] ‘take a sheep’ /H/ + /L(H)/ → [H] + [H]
(33) /bönlú hɛ́yɛ́ → [bönlú hɛ́yɛ́] ‘take a goat’ /L(H)/ + /L(H)/ → [L] + [H]
(34) /ńàálɛ̀ hɛ́yɛ́ → [ńàálɛ̀ hɛ́yɛ́“] ‘take a cat’ /L/ + /L(H)/ → [L] + [L”]

In (32) underlying /L(H)/ of the verb hɛ́yɛ́ becomes [H] after H in béláá. In (33) floating H of bönlú triggers the change on /L(H)/ of the verb. There is no change in (34) as there is no H preceding /L(H)/ melody in this example.

The same rule applies within a combination of auxiliary and non-branching verb phrase (35) except for resultative –àǎ auxiliaries (36); it is also banned after adverbs (37) – instead, another rule applies in (36-37), cf. 3.4.

(35) /ě kúlò/ → [è kúló] ‘let him go!’
(36) /àǎ kúlò/ → [áá kúlò“] ‘he has gone away’
(37) /ńàá kèlèè lègə wàlî ɓà/ → [ńàá kèlèè lègə wàlî ɓà]; *[ńàá kèlèè lègə wàlî ɓà]

1SG.RES.P today forget money on
‘I have forgotten the money today’.

Interestingly, Rule 2 only applies when verb phrase is part of the finite clause. Whenever it is embedded into a noun phrase, H does not spread on /L(H)/. This is illustrated in (38), example (6) from subsection 1.2 is repeated here as (39):

(38) /ńàá kónóŋ mìǐ/ → [ńàá kónóŋ mìǐ]

1SG.RES.P food eat
‘I’ve eaten (food)’.
In (38) the verb is in the finite clause so the rule applies but there is no change in (39) where the verb phrase is embedded into the noun phrase.

Also, Rule 2 does not apply if the verb with /L(H)/ melody has a nominalizing suffix –ì/-zi (for stems with final –ŋ) in progressive and some other constructions. The suffix triggers floating (H) linking on the last syllable of the verb; and then H spread on the verb is blocked. This is illustrated in (40-41):

(40) /tòǒ/ + -ì → [tòóì]
(41) /Héní káá wèlë tòǒ-ì/ → [Héní káá wèlë tòóì]; *[Héní káá wèlë tòóì]

Héní káá wèlë tòǒ-ì
Henì be song make-NF

‘Henì is singing a song’.

H does not spread on /L(H)/ in postpositional phrases (42), nor does it spread in noun phrases [NP_GEN N]NP expressing inalienable possession where head and dependent noun phrases are juxtaposed (43). The only exception I am aware of is the noun lèě ‘mother’ which gets [HL] melody after H (44).

(42) /kpélfíŋ mèi/ → [kpélfíŋ mèi]; *[kpélfíŋ mèi] ‘on a chair’
(43) /é kɔlɔ/ → [é kɔlɔ] ‘your skin’
(44) /é lèě/ → [é lèě] ‘your mother’

Another theoretically possible context for Rule 2 is a combination of noun and a nominal modifier within a noun phrase. Adjective is a very marginal part of speech in GK, and no lexical /L(H)/ was attested in this class. Instead, verbs in a stative form and numerals normally appear as

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5 In another dialect of GK I am familiar with, tìŋɒnàålɔi, all head nouns with lexical /L(H)/ melody occurring in a noun phrase [NP_GEN N]NP change their melody to [HL] after H: /é kɔlɔ/ → [é kɔlɔ] ‘your skin’. For some nouns the rule applies optionally: /é huyu/ → [é huyu] or [é huyu] ‘your clan’.

6 Since modifiers cannot have /L/ melody in GK, I did not discuss this case for Rule 1.
nominal modifiers, they always follow the head noun. However, Rule 2 never applies in such cases as shown in (45-46):

(45) /béláá kwèlēɛ̌/ → [béláá kwèlēɛ̌]  
béláá  kwèlēɛ̌  
sheep  be.white-STAT  
‘white sheep’

(46) /béláá hwèèlɛ̌/ → [béláá hwèèlɛ̌] ‘two sheep’

The information on Rule 1 and Rule 2 is summarized in Table 2.

Table 2: H tone spread on /L/ and /L(H)/

<table>
<thead>
<tr>
<th>Syntactic context</th>
<th>Rule 1: H tone spread on /L/</th>
<th>Rule 2: H tone spread on /L(H)/</th>
</tr>
</thead>
<tbody>
<tr>
<td>[NP_{OBJ} V]_VP</td>
<td>yes</td>
<td>yes/no (depending on the context)</td>
</tr>
<tr>
<td>[NP_{GEN} N]_NP</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>[NP P]_PP</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>[Aux [VP]]_I'</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>[Adv [VP]]_VP'</td>
<td>yes/no (optional)</td>
<td>no</td>
</tr>
</tbody>
</table>

It is interesting to note that /L/ melody relevant for Rule 1 is always morphologically assigned (except for postpositions which can have lexical /L/) and it is more accessible for surface change. /L(H)/ melody is always lexical and it only changes on the verb, so Rule 2 depends on the head’s part of speech.

3.3 Rule 3: Contour simplification

I use the term “Contour simplification” (CS) to denote a process whereby any word final falling sequence HL becomes [H] (to make it clear, by “word” I refer to syntactic word here). There are two subcases here as presented in (47-53):

(47) HL + L → [H] + [L]
(48) /bìì hù/ → [bìì hù] ‘in a bag’
(49) /yìlê kàà/ → [yìlê kàà] ‘saw a dog’
(50) /dàbálí hèɣè/ → [dàbálí hèɣè] ‘take the table’
(51) HL + H → [H] + ![H]
(52) /dàbálí nè/ → [dàbálí !nè] ‘on the table’
When word final HL is followed by L – which can be /L/, /L(H)/, /LHL/, or /LH/, its L is absorbed into the following L (47-50). When followed by H – /H/ or /HL/, final L of the contour is deleted, and the next H is downstepped (51-53).

Rule 3 can also operate on the output of the Rule 1. The output of Rule 1 is [HL] which becomes input for Contour simplification (55-58) unless the contour is before a pause (54):

(54)  /ɲé pà/  →  [ɲé pā]  (H spread on /L/)  ‘I came’
(55)  /ɲé pà làà/  →  [ɲé pā làā]  (H spread on /L/)  →  [ɲé pā làā]  (CS)  ‘I came there’
(56)  /ɲé pà ɓɛ́/  →  [ɲé pā ɓɛ́]  (H spread on /L/)  →  [ɲé pā !ɓɛ́]  (CS)  ‘I came here’
(57)  /é lēnè Hēhēè ɓà/  →  [é lēnè Hēhēè ɓà]  (H spread on /L/)  →  [é lēnè Hēhēè ɓà]  (CS)  ‘you rejected Hehe’
(58)  /é lēnè Pépèè ɓà/  →  [é lēnè Pépèè ɓà]  (H spread on /L/)  →  [é lēnè !Pépèè ɓà]  (CS)  ‘you rejected Pepe’

Speaking in terms of rule interaction, we can say that Rule 1 and in some cases Rule 2 feed Rule 3 creating more contexts, i.e. HL contours on which Rule 3 operates.

Contour simplification applies within and across syntactic boundaries – e.g. between verb phrase and adverbial modifier (55-56), between verb phrase and postpositional phrase (57-58) etc. Its syntactic domain is a clause, or intonation phrase in prosodic terms.

3.4  Rule 4: regressive (H) linking

When /L(H)/ is followed by L which can be in fact /L/, /L(H)/, /LHL/, or /LH/, the lexical floating tone becomes regressively linked to the last syllable of the word as in (59-61):
As the reader may have noticed, phonological contexts where regressive (H) linking could apply coincide partly with contexts where Rules 1 and 2 apply as shown in (62-64):

(62) Rule 1: /L(H)/ + /L/ → L + HL 
(63) Rule 2: /L(H)/ + /L(H)/ → L + H 
(64) Rule 4: /L(H)/ + L → LH + L 

Again, speaking in terms of rule interaction, Rules 1 and 2 bleed Rule 4 reducing the number of contexts where it can apply. In other words, Rule 4 applies after Rules 1 and 2 and, crucially, in those contexts where the latter do not operate. This is illustrated in (65):

(65) /béláá téγe ꙕàwɔlò pá/ → /béláá téγe ꙕàwɔlò pá/

In (65) the following combination of melodies is shown: /H/ + /L(H)/ + /L/ + /H/. As [béláá téγe]vp is a verb phrase, H spreads on /L(H)/ within this syntactic constituent so we get [H] + [H] + [L] + [H]. Context for Rule 4 is deleted so it does not apply. Consider (66):

(66) /ɲàlèè téγe ꙕàwɔlò pá/ → [ɲàlèè téγe ꙕàwɔlò pá]

In (74) there is /L/ + /L(H)/ + /L/ + /H/. No H tone spreads in the verb phrase, so Rule 4 applies between the verb and postpositional phrase which yields [L] + [LH] + [L] + [H].

Crucially, regressive (H) linking can occur across syntactic boundaries - between the subject noun phrase and the auxiliary (67), the auxiliary and the verb phrase (61), the auxiliary and the direct object (68), between the verb phrase and the postpositional phrase (66), between the postpositional phrase and the adverb (69):
(67) /kẽ̀ àǎ kéléŋ́/ → [kẽ̀ àǎ kéléŋ́]
  [kẽ̀]_{NP} [àǎ kéléŋ́]_{I'}
  field 3SG.RES.P burn
  'The field has burned'.

(68) /ɲàǎ jààlèè káá/ → /ɲàá jààlèè káá/
  [ɲàǎ [jààlèè káá]_{VP}}
  1SG.RES.P cat see
  'I saw a cat'.

(69) /ả hèè Pépèè kwèlè kèlèkèlè/ → /à hëè !Pépèè kwèlè kèlèkèlè/
  [ [ả [hèè]_{IP}}]
  3SG.HAB.P sit\HAB Pepe near often
  'He often sits near Pepe'.

  In fact, in (69) three rules discussed above apply: H spread on the verb /hèè/ which gives [hèè], contour simplification yielding downstepped H on Pépèè, and regressive (H) linking on /kwèlè/. In (70) a step-by-step tonal derivation for (69) is shown:

(70) /ả hèè Pépèè kwèlè kèlèkèlè/ → /à hëè !Pépèè kwèlè kèlèkèlè/ → /à hëè !Pépèè kwèlè kèlèkèlè] → [à hëè !Pépèè kwèlè kèlèkèlè]

  However, regressive (H) linking can never cross a clause boundary:

(71) /ả hèè Pépèè kwèlè yè yìì/ → /à hëè !Pépèè kwèlè yè yìì/
  [[[ả [hèè]_{IP}}]
  3SG.HAB.P sit Pepe near 3SG.CONJ sleep\HAB
  'He (usually) sits near Pepe and sleeps'.

  In (71) the utterance consists of two separate clauses – the first has a habitual positive auxiliary ả, in the second one the auxiliary yè marks a concomitant event. The structure for (71) is given in (72):
Floating (H) on kwèlé does not get linked before yé because they are separated by a clause boundary.

The rules discussed in 3.1-3.4 are represented schematically in (73):

Scheme (73) shows that there are two groups of tone rules in GK: those applied within a syntactic constituent and those applied within a clause. The first group consists of H spread rules – H spread on /L/ (Rule 1) and /H/ spread on /L(H)/ (Rule 2). Rule 1 and, marginally, Rule 2 – in the case of léé shown in (44) – feed Rule 3, which simplifies contours within a clause. At the same time, these rules bleed Rule 4 which links floating (H) regressively before L within a clause.

4 Conclusion

In this article I have discussed the interaction between syntactic structure and tone rules in GK. First of all, I have demonstrated that GK has a cluster of non-trivial syntactic features
including a strict SAuxOVX word order and clause-external postpositional phrases (Section 1). Second, I have shown that tone is organized in six fixed melodies in the language which can undergo surface changes (Section 2). There are four rules accounting for surface changes of tone in GK, namely H tone spread on /L/, H tone spread on /L(H)/, Contour simplification, and Regressive (H) linking (Section 3). I argue that there is a strong correspondence between syntax and tonal rules in the language. The first two rules apply within syntactic constituents, the second two rules operate within clause. A mismatch is, however, also attested: H tone can spread from auxiliary to intransitive verb though they do not seem to form a syntactic constituent together. Thus it is reasonable to postulate separate prosodic constituents for GK, such as phonological and intonation phrase, which, however, correspond to syntactic structure in most cases. To conclude, Kpelle data support the “Match” model of phonology-syntactic interface as argued in Selkirk (2009, 2011) which calls for a correspondence between syntactic and prosodic constituents.

5 References


160-167.
The Three Degrees of Definiteness

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1 Introduction

Crosslinguistically, in languages with definite articles, definite articles most frequently appear with common nouns, mass or count (Carlson & Pelletier, 1995). There are cases though where other types of nominals, such as proper names and generic nouns, may also come with a determiner. Such determiners have been treated as semantic expletives that are inserted to satisfy a syntactic requirement, as in Italian and French (Longobardi 1994, among others), or to spell out case morphology, as in the case of Greek (Lekakou & Szendrői 2010). Some examples of these determiners are given below:

(1) [...] dass die Insekten nicht aussterben können.
  dass die   Insekt-en   nicht   aussterb-en    könn-en
  that the.PL   Insect-PL   NEG   become-extinct.INF   can-3PL
  ‘that insects cannot be extinct.’ (German)

(2) I Anna   i ɣlosoloɣos
  I   Anna    i   ylosoloɣ-os
  The.NOM.FEM  Anne.FEM  the.NOM.FEM  linguist-NOM
  ‘Anne the linguist’ (Greek)

(3) Les dodos sont éteints.
  Les   dodo-s   sont    éteint-s
  The.PL  dodo-PL  be.PRES.3PL  extinct- PL.
  ‘Dodos are extinct.’ (French)

A closer look at the properties of the so-called expletive determiners however reveals some new insights while it raises some important questions that the expletive account cannot address. For example, it is not clear that the determiner is in such cases always a semantic expletive, i.e., that it does not contribute any definiteness to the nominal. In some cases, it can

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2 Abbreviations: PL = plural, NEG = negation, INF = infinitive, NOM = nominative, GEN = genitive, ACC = accusative, FEM = feminine, MASC = masculine, NEU = neutral, PRES = present, PST = past, PRTC = participle, DEF = definite, INDF = indefinite, SPRL = superlative.
only appear with semantically definite nominals, while in others it can also appear with indefinite ones. This suggests that a distinction between these two types of expletive determiners needs to be made, since the former seems to contribute some aspect of definiteness while the latter does not. This distinction is not possible if we take all such determiners to be expletives, while the definite properties of some of the so-called expletive determiners are simply dismissed. Moreover, the expletive determiners that appear to contribute definiteness also show a systematicity in their distribution. True expletives on the other hand, lack this systematicity, being sometimes also optional. This is another important property of definite determiners that clearly supports a definiteness distinction among the determiners, and that cannot be accounted for by the expletive account.

In this work, the properties of expletives are addressed from a different perspective, one that explores the possibility that some of them are in fact definite, or rather, as we will see, partially definite. In addition to the semantic expletives and the typically definite determiners then, I argue that there is a third type of definite determiner, i.e. those that are underspecified for definiteness. Assuming that definiteness consists of two features, uniqueness and familiarity (Kyriakaki 2011a, b), determiners may spell out both, one, or neither of these features. In effect, three types of definite determiners arise: (i) definite determiners that are fully specified for definiteness, spelling out both uniqueness and familiarity; (ii) underspecified definite determiners, which only spell out familiarity; and (iii) determiners that are unspecified for definiteness, i.e., the true expletives. This type of specification entails that definiteness comes in three degrees: full, partial, and zero definiteness.

Under this view of definiteness, the properties of definite determiners reviewed here are easily accounted for. In particular, fully definite determiners are predicted to exhibit a limited distribution, i.e., they appear with nominals where a unique and familiar entity is picked out. Definite determiners that spell out only familiarity are predicted to exhibit a more flexible distribution. They allow for further restriction and are thus able to appear with other nominals, such as proper names, generic nouns, possessives, and modifying nominals. Finally, zero-specified determiners are predicted to have the widest distribution and can be present even in indefinite DPs. Hence, under this view of definiteness the properties of the determiners straightforwardly follow, while a new, closer view of definiteness is presented.

This paper is organized as follows. Section 2.1 starts by examining the case of the Greek definite determiner, previously claimed to be an expletive. The expletive account is argued to miss some of its syntactic-semantic properties. Section 2.2 presents the tests that help us distinguish between true expletives and definite determiners. Based on these criteria, the Greek definite determiner is shown to be definite, though only partially. Section 3 presents the syntactic-semantic account of the three degrees of definiteness. Section 4 presents some crosslinguistic evidence for the three degrees of definiteness and shows how the proposed analysis can straightforwardly account for such cases, as well. Finally, section 5 summarizes the benefits of the proposed account and suggests some intriguing future research directions.
Expletives or (underspecified) definite determiners

2.1 The Greek definite article and the expletive account

In Greek, the definite article is obligatory with various definite nominals. This includes proper names and possessive nominals, as in (4). It is also obligatory with kind-denoting generic subjects and objects, as in (5):

(4) *(O) Stratis zitise *(to) vivlio tu apo *(tin) Anna.

*(O) Strati-s zitis-e *(to) vivlio tu
The.MASC.NOM Stratis.MASC-NOM ask.PST-3S the.NEU book.NEU his.GEN
apo *(tin) Anna
from the.FEM.ACC Anna.FEM
‘Stratis asked Anna for his book’ (Proper names and possessives)

(5) *(I) elefandes latrevun *(ta) fistikja.

*(I) elefand-es latrev-un *(ta) fistikj-a
The.MASC.PL elephant.MASC-PL adore.PRES-3PL the.NEU.PL peanut.NEU-PL
‘Elephants adore peanuts.’ (Generic subject and object)

Additionally, the Greek definite article can appear more than once in the same nominal, as shown in (6) and (7). In (6), the definite article is each time followed by an adjective forming the so-called polydefinites (term by Kolliakou, 2004). In (7) the definite article is followed by a modifying noun. In Kyriakaki (2011a, b), both of these constructions are argued to involve restrictive modification by nominals (RMN, in short), as the article followed by the adjective or the modifying noun is shown to form a nominal that restrictively modifies the head noun.

(6) *(To) kenurjo (to) kocino (to) poðilato, *(to) γριγυρο

*(To) kenurj-o (to) kocin-o (to) poðilat-o, *(to) γριγυρ-o
The.NEU new-NEU red-NEU bicycle-NEU quick-NEU
‘The new, red, quick bike’ (RMN)

(7) O kaðijitis o γλοσσολογος

O kaðijit-is o γλοσσολογος
The.MASC.NOM professor-MASC.NOM the.MASC.NOM linguist-MASC.NOM
‘The professor – the linguist (e.g. not the psychologist)’ (RMN)

Overall, the Greek definite article exhibits a remarkable flexibility in its distribution: it is present with all definite nominals, including proper names, generic subjects and objects, and it can also appear more than once in the nominal.
To account for this kind of flexibility, previous analyses have claimed that the Greek definite article is a semantic expletive (Roussou & Tsimpli 1994, Lekakou & Szendrői 2010). Roussou and Tsimpli (1994), in particular, claim that the Greek definite article is inserted to satisfy the lexical government requirement proposed by Longobardi (1994), and to allow the nominal to function as an argument. They base their claim solely on the fact that the definite article is obligatory with generic nouns, and since for them these are indefinite, the definite article must be an expletive. As they admit though, their analysis also runs into problems. Heavily relying on Longobardi’s lexical requirement (1994), they cannot account for why the definite article in generic objects too is also obligatory. Additionally, their assumption that generics are indefinite and therefore the definite article that introduces them is not semantically definite is also problematic. As we will see next, Lyons (1999) argues that generics are definite in a way, denoting a kind that is familiar to us all. If we thus take generics to be definite, their conclusion that the definite article is an expletive cannot be maintained.

In a more recent approach, Lekakou and Szendrői (2010) also take the definite article to be an expletive, basing their claim on the fact that it is used with proper names. They argue that the article is inserted to render the nominal argumental, as well as to spell out morphological case. Looking at polydefinite constructions like in (6), they argue that such constructions are the result of case marking, making the prediction that every language with case marking should exhibit such constructions. However, this account does not show conclusively that the definite article is an expletive. If the Greek definite article were an expletive, inserted only to spell out case, bare arguments should be absent from this language altogether. However, bare arguments are possible (see section 2.2, below). Second, the determiner does not always overtly spell out case, while there are many paradigmatic syncretisms, too. Finally, if the article were inserted only to spell out case, we should be able to find it in indefinite contexts, too, which is not the case (see Kyriakaki 2011a, for a more detailed discussion). In addition, their prediction that every language with case marking should exhibit such constructions cannot be maintained. There are languages with morphological case where the determiner does not appear more than once in the nominal (e.g., German), while there are also languages without morphological case, such as Scottish English, where the determiner can still appear more than once (e.g., the friend the footballer). Hence, other factors must be responsible for this phenomenon. Although the expletive accounts discussed here provide some insights about the determiner, they do not support the claim that the Greek definite article is an expletive. Let us now consider whether it is indeed an expletive.

2.2 Criteria/tests for expletives

In order to determine whether a definite article is an expletive or not we first need to establish the criteria or tests that distinguish expletive from non-expletive determiners. In this section I present these criteria, and examine whether the Greek determiner is semantically definite or not.
First, determiners that are semantically definite should not be able to appear in existential indefinite DPs. In the case of expletives, nothing prevents them from appearing in nominals with indefinite readings. This is our first criterion to determine whether a definite article is an expletive. In Greek, the definite determiner is never found in such nominals, rather a bare nominal is used instead:

(8) Efera molivi/ molivja ke stilo
   E-fer-a molivi/ molivja ke stilo
   PST-bring-PST.1S pencil.NEU/ pencil.NEU.PL and pen.NEU/ pen.NEU.PL
   ‘I brought a pencil/ pencils and a pen/ pens.’

Second, a determiner that appears with kind-denoting generics is not necessarily an expletive, since such nominals are partially definite. I take kind-denoting generics to be semantically definite. According to Lyons (1999), the reference to a whole ensemble is what makes generics familiar, and thus must be at least partially definite. More evidence that generics are at least partially definite comes from the fact that indefinite singulars cannot be used as kind-referring terms. Osterhof (2008) provides us with such examples. As can be observed in (9) indefinite singulars cannot be used generically in either German or English. This is another important indicator that generic nominals involve definiteness:

(9) # Ein dodo ist ausgestorben.
   Ein dodo ist ausgestorb-en
   A dodo be.3S PRTC.become.extinct.PST-PRTC
   # A dodo is extinct.

Similarly, in Greek this is not possible either. The only way to denote kind-denoting expressions is with the use of the definite article:

(10) # Enas δίνοσαυρος εξεικλπσι.
    Ena-s δινοσαυρ-ος exi eklipsi
    A-MASC.NOM dinosaur-MASC.NOM have.3S extinct.INF
    # A dinosaur is extinct.

(11) I δίνοσαυρι εξεικλπσι.
    I δινοσαυρ-ι exun eklipsi
    The.MASC.NOM.PL dinosaur-MASC.NOM.PL have.3PL extinct.INF
    ‘Dinosaurs are extinct.’
Finally, definite determiners that show a systematic distribution may not be semantic expletives. Definite determiners that lack this systematicity though, and can sometimes be optional, are possibly semantic expletives.

In Greek, the definite determiner appears systematically with all and only definite DPs: count nouns, proper names, possessives and generics. This systematicity suggests that it is inherently definite. In contrast, true expletives lack this systematicity, as in the case of Italian determiners, as we will see next.

Overall, the criteria proposed in this section help us determine whether a definite determiner is an expletive or not. In the case of Greek, the definite article cannot be a semantic expletive, since it never appears with indefinite existential DPs, it is obligatory in all definite nominals, including generics, and it exhibits a systematicity in its distribution. Therefore, we can conclude that the Greek definite article contributes definiteness to the nominal, its flexible distribution also suggests that it is not a typical definite determiner, since it can appear with generics and proper names and it also gives rise to RMN. Since it is not an expletive and it is not a typical definite determiner, then the question is what type of determiner is it? The answer to this is that determiners of this type, which contribute some aspect of definiteness, actually form an intermediate group of definite determiners, what I will call the underspecified definite determiners. In the next section, I consider the analysis that accounts for the various degrees of specification of definiteness.

3 A definiteness account: The three degrees

3.1 Essence and structure

In this section, I argue that definiteness consists of semantic components that map onto distinct syntactic projections. Definite determiners can spell out all, some, or none of the components, giving rise to three degrees of definiteness: full, partial, and zero definiteness.

Crosslinguistically, it has been shown that the familiarity or uniqueness requirement alone does not suffice to pick out a unique individual. For this reason, the context is also argued to play an important role in determining it (Chung & Ladusaw 2004, Giannakidou 2004, among others). Gillon (2006, 2009) for instance offers a semantic analysis where definiteness is decomposed into domain restriction, i.e., the set of elements in the contexts, and the uniqueness presupposition. For her, the former is a universal property of language, while the latter is a language-specific property. Lyons (1999) also gives an account of definiteness arguing that it is not possible to provide a universal semantics for definiteness, since it may vary cross-linguistically. As he explains, the determiner may encode different semantic functions in different languages.

Focusing on languages with definite articles, I will show that determiners can be specified with different definiteness features. Based on previous work on definiteness (Heim 1982, Heim and Kratzer 1998, and Lyons 1999, among others), and relying on previous work from Kyriakaki (2011), I take definiteness to be a functional category, DefP, on a par with tense,
mood, etc., which is active in languages with overt marking. Full definiteness may consist of two features, uniqueness (Heim and Kratzer 1998) and familiarity (Heim, 1982). Depending on the features spelled out by the determiner, these features can map onto two distinct syntactic projections, an iota phrase (ιP) for uniqueness, and a familiarity phrase (FamP), as in (12). In languages where the determiner spells out both features, i.e., where the determiner is fully specified for definiteness, definiteness does not decompose. Rather, it remains a DefP. In the case that the determiner only spells out one of the features, familiarity, definiteness is divided between FamP and ιP:

(12) The mapping of definiteness in languages with overt marking

\[
\text{Definiteness} \\
\begin{array}{c}
\text{ιP} \\
\text{ι} \\
\text{FamP}_{\text{set}} \\
\text{Fam} \\
\text{NumP} \\
\end{array} \\
\Rightarrow \text{DefP}
\]

According to this mapping, Fam first combines with the nominal and a set of familiar entities is selected. As shown in (12), the resulting nominal is a predicative FamP, as Fam only selects a contextually salient or familiar set of entities. Next, argumental head ι is merged and a unique entity is picked out. Interestingly, on the assumption that FamP is predicative, the explanation for why RMN is possible in some languages now easily follows. Modifying nominals are also predicates (Heim and Kratzer, 1998) and thus can combine with FamP via the intersective operation predicative modification. Moreover, since Fam only selects a familiar set of entities, we also have an explanation for why definite generics arise: the determiner is a Fam head and thus a familiar set is picked out.³

Going back to the Greek determiner, we have seen that it introduces proper names, possessives, and generics, and also combine with RMN. Since these nominals must involve a predicative FamP, and thus exhibit a syntactic-semantic split in their structure, we can conclude that the determiner spells out Fam, i.e., it is an underspecified familiarity head. It does not select a unique individual, but rather a contextually salient set of entities. It can thus appear with all definite nominals.

3.2 Heads and nominals

The framework developed in 3.1 gives us the right results but also makes some new predictions. First and foremost, by assuming that definiteness consists of two features, and that these may or may not map onto two distinct syntactic projections, it is automatically predicted that there are at least three types of definite determiners:

³ See Section 3.2 for more on generics.
Three types of determiners

(i) Determiners that are fully specified for definiteness, i.e., they spell out both features of uniqueness and familiarity

(ii) Determiners that are underspecified for definiteness spelling out one feature, Fam

(iii) Determiners that are zero-specified for definiteness spelling out none of the features

In 2.2, we saw evidence for an intermediate degree of definiteness. This is captured in the proposed framework. We thus have three degrees of definiteness emerging: full, partial, and zero definiteness. Full definiteness arises with nominals forming DefPs. Partial definiteness arises with FamPs, and zero definiteness arises with nominals, possibly DPs, whose head is an expletive determiner.

Another consequence is that the distribution of definite determiners can now easily be predicted. Depending on their specification, fully definite determiners are predicted to show a limited distribution. They are Def heads that select a unique and familiar individual. Further restriction on the nominal is thus not possible. Underspecified definite determiners are predicted to show a wider distribution. They are Fam heads and can thus introduce generics, proper names, and possessives. They form predicative FamPs and can combine with RMN. Finally, zero-specified definite determiners do not contribute definiteness, and thus show the most flexible distribution. They are used to fulfill a syntactic/morphological requirement and can be present in various types of nominals, including those with indefinite readings. In section 5, I present examples of each of these types of determiners.

Moreover, definite nominals with a syntactic-semantic split in their D-structure, such as generics, may now involve different semantic components. For example, it was earlier concluded that generics are partially definite involving a familiarity head. However, unlike other definite nominals, a specific entity or set of entities is not picked out here. Instead, a whole set of entities sharing a property is singled out from sets of entities sharing different properties. Generic nominals contain a generic operator, Gen (Carlson & Pelletier, 1995), rather than $\iota$. In contrast to $\iota$, Gen singles out a set of entities with the specific properties and gives us an argument GenP:

(14) Generic nominals
An important consequence of this proposal is that we can make the prediction that definite plurals are of two types: (i) the **specific definites**, where there is a unique individual/ set of individuals that is selected by means of the iota function; (ii) **generic definites**, where Gen singles out a set of entities with specific properties.

The proposed framework makes the correct predictions about the distribution of definite determiners casting new light on the nature of definiteness. Based on this work, I now consider determiners of other languages that present examples of the three types of definiteness.

4 Full, partial, and zero definiteness

4.1 Standard English (SE)

In English, I consider the definite determiner *the* and the null D which appears with proper names, possessives, and generics (Longobardi 1994, Ritter 1991, Massam and Ghomeshi 2009, Kyriakaki 2011a, among others).

The SE definite determiner *the* typically introduces common nouns (cf. 15). It does not appear with proper names (cf. 16), and as shown in (17), it cannot appear with plural:

(15) The professor is giving a lecture.
(16) *The Susanna is drawing on the canvas. (*Def + PN)
(17) #The beavers are intelligent (#generic interpretation is not possible)

Hence, the definite article *the* appears to be more restricted in its distribution that the Greek definite determiner: it easily combines with count nouns picking out a unique entity, but not with nominals where a familiar entity is picked out, as in the case of proper names and generic nouns.\(^4\) This suggests that *the* is not underspecified and spells out more than just familiarity. Since it combines only with nouns picking out a unique referent, it must be the case that *the* is fully specified for definiteness, spelling out uniqueness as well as familiarity. More evidence for this comes from RMN. As can be observed in (18), nominals headed by *the* cannot have restrictive nominal modifiers, i.e., further restriction on the noun is not allowed.

(18) a. *The professor the linguist is taller than the professor the biologist (*RMN)
b. *The professor {the linguist/the genius/the athlete}

In this example, the head nominal *the professor* cannot further combine with the restrictive modifying nominal *the linguist*. The definite article *the* selects a unique entity and therefore, further restriction is not possible. In contrast to the underspecified Greek article, we can now conclude that SE *the* is not underspecified for definiteness. Rather, it is fully specified for both

\(^4\) As shown next, this contrasts with null D where a unique referent is not necessarily picked out (c.f. ø Jill my friend, not my cousin).
uniqueness and familiarity. SE the constitutes thus our first example of a fully specified definite determiner.

Turning to SE null D, definite nominals that come with it are proper names, possessives, and generics:

(19) Ø Susanna is drawing on the canvas.
(20) Ø John saw his cousin drawing on a canvas.
(21) Ø Dinosaurs became extinct 40,000 years ago. (Carlson, 1977)

In contrast to SE the, null D shows a more flexible distribution: i.e., it can appear with proper names, pronominal possessives, and generics which primarily involve familiarity. This type of distribution strongly suggests that null D is not fully definite, but only underspecified for it, spelling out familiarity. Familiarity heads may also combine with RMN. As shown below, RMN is indeed possible providing further evidence that null D spells out only Fam:

(22) I saw my cousin Abigail (not Shanna)
(23) My neighbor the doctor/the genius
(24) John the professor is taller than John the doctor.

English thus presents us with two types of definite determiners: (i) the, a fully specified definite determiner, spelling out both uniqueness and familiarity; (ii) null D, an underspecified definite determiner, spelling out only Fam.

4.2 Italian

It has been previously claimed that the Italian definite article is a semantic expletive (Vergnaud and Zubizaretta 1990, and Longobardi 1994). Italian argumental nouns obligatorily have a determiner, usually the (in)/definite article, a quantifier, or a demonstrative. Bare count nouns in argument positions are not allowed, as also shown in (25) below (see Longobardi (1994) for more on this):

(25) *(Un/Il) grande amico di Maria mi ha telefonato.
    Un / Il grand-e amic-o di Maria mi ha
telefon-ato.
    (A/ The) great friend of Maria has called me up. (Longobardi, 1994: 4)

Generic nouns in Italian also come with a determiner, the definite one. As Brugger (1993) also argues, definite generics are in fact the only way to denote kinds:
*(I) castori sono intelligenti.
*(I) castor-i sono intelligent-i.
The.PL beaver-PL be.3PL intelligent-PL
‘Beavers are intelligent.’ (Brugger, 1993: 12)

I montanari adorano i montanari
I montanar-i adorano i montanar-i
The.PL highlander-PL adore.3PL the.PL highlander-PL
‘Highlanders adore highlanders.’ (Brugger, 1993: 13)

Proper names on the other hand occur freely without a determiner. However, alternations between the presence and the absence of the article are possible (Longobardi, 1994: 15):

(II) Gianni mi ha telefonato
Il Gianni mi ha telefonato
The.DEF John me has.3SG call.PRTC
‘John called me up.’

Il mio Gianni ha telefonato
OR Gianni mio ha telefonato
Il mio Gianni ha telefonato Gianni mio ha telefonato
The.DEF my John have.3SG call.PRTC John my have call.PRTC
‘My John has called.’

To conclude, the Italian definite article is obligatory with arguments and generic nouns. On the other hand, it is optional with proper names. To account for this distribution, Longobardi (1994) has argued that the Italian definite article is a semantic expletive. This conclusion easily follows from the theory developed in this work. Based on the criteria presented in section 2, the Italian definite article clearly lacks the necessary systematicity, since it is obligatory in some contexts but optional in others. We can further confirm this possibility by checking whether it also appears in indefinite contexts. If the Italian determiner is truly an expletive, we should be able to find it in such contexts. Indeed, Zamparelli (1992: 8) provides us with such an example. As shown below, the Italian definite article can appear in existential indefinite contexts. Notice further that there is no definiteness restriction even in clearly existential contexts:

C’è {Gianni / il mio cane} in giardino.
C’ è {Gianni/ il mio cane} in giardino.
There be.3S Gianni / the.MASC mio.MASC dog in garden
*There is {John / my dog} in the garden
(31) In cantina ci sono [i topi] e sotto il lavello vivono [gli scarafaggi]
    In basement there be.3PL the.PL mouse.PL and under the.MASC
    sink.MASC live.PL the.PL cockroach.PL
    ‘There are mice in the basement and cockroaches under the sink’.

(32) Che fai per mestiere? Fotografo [gli uccelli]
    What do for living.INF photograph.1S [the.PL bird.PL]
    ‘What do you do for a living? I photograph birds.

The examples in (30-32) clearly show that that the Italian definite article is a semantic expletive. Hence, unlike other types of definite determiners, such as those of English and Greek, the Italian definite determiner can be optional, but it can also head nominals with existential indefinite readings. We can therefore conclude that the Italian definite determiner constitutes a case of a zero-specified definite determiner.

In conclusion, so far we have seen examples of all three types of definite determiners: (i) a case of a fully definite determiner exemplified by the SE definite article the; (ii) a case of underspecified familiarity determiners exemplified by the Greek definite article; (iii) and finally a case of a true expletive exemplified by the Italian definite determiner. Next, I look at two more examples with underspecified definite determiners, previously argued to be semantic expletives.

4.3 German

The German definite article is expected to be semantically closer to English than to Greek. However, this is not exactly the case. The German definite article shows variety in its distribution depending on the location. In Northern Germany it appears to behave more like SE the, in that its use is mostly commonly restricted to common nouns. Elsewhere though, and especially in the south, the definite article shows more flexibility in its distribution.

Beginning with proper names, in Northern Germany they do not typically take a determiner, although determiners are increasingly used in colloquial speech (Durell, 2002). In the south proper names typically come with a determiner, and as shown by Moltmann (2013), it can be obligatory and can be further modified by an adjective:

(33) Man darf *(den) Kailash nicht besteigen.
    One may.3S the.MASC.ACC Kailash.MASC NEG climb.INF
    ‘One is not allowed to climb Kailash.’

(34) *(Der) Kailash ist heilig.
German also exhibits definite generics, as well as bare generics. Interestingly, Brugger (1993:4) argues that definite generics are the only way in German to denote kinds, and that bare plurals only denote a subspecies. When a kind-level interpretation is required, only definite plurals are felicitous. As shown in (36) for instance, the kind-level predicate *aussterben* ‘become extinct’ is infelicitous with the bare plural, but, as shown in (37), it is felicitous with definite plurals.

(36)  #dass Dinosaurier dabei sind auszusterben.
#dass Dinosaur-ier dabei sind auszusterben
that dinosaur-PL thereby.ADV be.3PL become.extinct-INF
‘that dinosaurs are becoming extinct’

(37)  dass die Dinosaurier dabei sind auszusterben
dass die Dinosaur-ier dabei sind auszusterben
that the.NOM.PL dinosaur-PL thereby.ADV be.3PL become.extinct-INF
‘that the dinosaurs are becoming extinct’

The definite article in Mid/Southern Germany shares properties with English null D and Greek D in that: (i) it accompanies generics; (ii) it introduces proper names, and (iii) it does not appear in existential indefinite contexts. However, it does not appear to allow RMN, though appositives seem to be possible, as shown in (38):

(38)  [...] als das Kind – das jüngste von sechs – zu schreien und atmen begann.
als das Kind das jüng-ste von sechs zu schrei-en und
when the.NEU child the.NEU young-SPRL from six to shout-INF and
atm-en begann
pant-INF start.PST.3S
‘When the child – the youngest one among the six – started shouting and panting.’

The Mid/Southern German definite article introduces generics to denote a property of kinds, and it allows for modification, while it also appears to be obligatory with proper names. We can therefore conclude that it functions like an underspecified Fam head. In Northern
Germany on the other hand, the definite article shows a limited distribution, as it typically appears with common nouns. I assume that it forms a fully definite article, though it seems to be undergoing a change, becoming underspecified. Future research will show whether this is the case.

4.4 French

In French, nominal arguments typically come with a determiner, either definite or indefinite. Bare arguments are generally not allowed (Chierchia, 1998: 355):

(39) *J’ai mangé biscuits avec mon lait.
   *J’ai mangé biscuit-s avec mon lait.
   I.1S have.1S eat.PRTC cookie-PL with my.MASC milk
   ‘I ate cookies with my milk.’

Since French disallows bare arguments we might expect proper names to take a determiner. However, this is not the case. Proper names do not come with a determiner, except for exceptional cases, such as names of rivers, countries, e.g. la Seine, la France (see Matushansky (2006), for more).

In the case of generics though, as in Italian, they obligatorily come with the definite article (cf. Krifka et al. 1995: 68). As shown below, the determiner must be definite:

(40) *(Des) Dodos sont éteints.
   *(Des) Dodos sont éteints.
   (INDF.PL) Dodo-PL be.3PL extinct-PL

(41) Les dodos sont éteints.
   Les dodos sont éteints
   The.PL Dodo-PL be.3PL extinct-PL
   ‘Dodos are extinct.’

Hence, the French definite article does not appear with proper names, but it is obligatory with generics. The question we need to consider then is whether the French definite article is an expletive or an underspecified Fam. It may not be a fully definite determiner, since it can appear with generics, which contain FamP but not ιP (see also Lyons 1999). To determine whether the French article is a semantic expletive, as in Italian, we can check whether it is compatible with existential indefinite readings. In this case too, Zamparelli (1992: 23-24) provides us with the corresponding example. As shown in (42) and (43), the French definite article is not compatible with indefinite readings. For such readings, the indefinite article is used:

(42) Dans l’ évier, il y a {?les/ des} souris, et sous le frigo
Dans l’évier, il-y-a {?les/ des} souris, et sous le frigo vivent {?les/ des} cafards.

‘In the sink there are mice and under the fridge live cockroaches.’

(43) […] je ne bois pas {*le/ de} café.

‘I do not drink coffee.’ (in the context of ‘I do not drink coffee any more’)

In conclusion, the French definite article is infelicitous in existential indefinite contexts, and it systematically appears with generics. Although it does not appear with proper names, it does not behave as if it lacks definiteness altogether. Rather, it must be underspecified for it, denoting familiarity.

5 Conclusion

In this work I explored the possibility that some definite determiners claimed to be expletives are partially underspecified for definiteness. This means that determiners are of three types: fully, partially, and zero-definite determiners. This type of specification of definiteness shows that definiteness can be of three degrees: full, partial, and zero definiteness. The crosslinguistic analysis presented here straightforwardly accounts for their syntactic-semantic properties. Definite determiners that are fully specified for definiteness are correctly predicted to show a more limited distribution. An example of this type of definite determiner is SE the. As such, its limited distribution follows. It picks out a unique, familiar individual and thus further restriction is not possible.

On the other hand, further restriction with underspecified definite determiners is predicted to be possible. Underspecified definite determiners select a familiar set and thus this set can be further restricted. A clear example of such a determiner is the Greek definite article. This determiner spells out Fam and its flexible distribution now easily follows: it can introduce various definite nominals, as well as combine with RMN.

Finally, semantic expletives are the third type of definite determiners that we can find cross-linguistically. They are completely unspecified for definiteness, i.e., they spell out neither of the features of definiteness. The Italian determiner is such an example. As a true expletive, its zero specification for definiteness enables it to appear in various contexts, including existential indefinites, as well as to be optional as well.

Hence, by assuming that definiteness comes in three degrees, the properties of the determiners are accounted for. Determiners spelling out all features of definiteness exhibit a limited distribution, while those spelling out fewer or no features exhibit a more flexible distribution.
This work also offers new insights about the essence and mapping of definiteness, but also provides us with some new intuitions about the notion of expletives. By reviewing the expletive account, the necessary criteria are set that help us distinguish between the expletive and underspecified determiners. Moreover, the proposed analysis of definiteness provides an alternative view to the expletive account, one that does not dismiss the semantic contribution of a definite determiner altogether. Rather, it recognizes that specification of definiteness can come in three degrees.

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Possessive Structures as Evidence for DP in West Greenlandic

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1  Introduction

The goal of this paper is to provide evidence for the existence of a DP projection in the West Greenlandic branch of Inuit. West Greenlandic (WG) does not have articles, which are typically the assumed occupants of the D-layer. The absence of articles has led to cases supporting NP-only structures in WG (Sadock 2003), the Inuktitut branch of Inuit (Compton 2004; Johns 2007, 2009), and articleless languages in general (Bošković 2008, 2012). I argue against these previous accounts, first by discussing the negative implications of a DP-less structure and then by introducing a possessive structure with a DP-layer that can account for the WG data. My argument proceeds as follows: in Section 2 I introduce the relevant WG data for nominals and possessives; in Section 3 I discuss the implications of a DP-less structure; in Section 4 I propose a DP structure to account for WG possessives; I conclude in Section 5.

2  Nominals and Possessives in West Greenlandic

2.1  Order of Elements

As a polysynthetic language (Fortescue 1984; Mithun 1999; Sadock 2003) WG has a fixed word-internal morpheme order in the nominal domain. The noun root appears in the leftmost position and is followed by adjectival modifiers, number marking, and structural case¹:

(1) iluliarsuq…
    ice.berg-big-SG.ABS
    ‘(the) giant iceberg…’  (Sommer, Berthelsen, & Holm 2005b:9)

(2) qajar-pasui-t…
    kayak-group-big-PL.ERG
    ‘the big mob(PL) of kayak men…’  (Sommer, Berthelsen, & Holm 2005a:12)

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¹ Abbreviations: SG (Singular), PL (Plural), 1 (1st Person), 2 (2nd Person), 3 (3rd Person), F (Feminine), iF (Interpretable feature), uF (Uninterpretable feature), ABS (Absolutive), ERG (Ergative), INS (Instrumental), DAT (Dative), NOM (Nominative), ABL (Ablative), INE (Inessive), POSS (Possessive), ANTIP (Antipassive), PFV (Perfective), INTR (Intransitive), TR (Transitive), IND (Indicative), FUT (Future), W (Weak inflection)
In addition, numerals, adjectives, and demonstratives modify nouns as separate ‘words.’ These exhibit concord in that they agree in number (and case when relevant)\(^2\):

\[
(3) \text{ Qimmi-mik taassuma-mik angituq-mik…} \\
\quad \text{dog-SG.INS that-SG.INS big-SG.INS} \\
\quad 'that big dog…' \quad \text{(Sadock 2003:26)}
\]

\[
(4) \text{ qimmi-t qaqurtu-t marluk taakku} \\
\quad \text{dog-PL white-PL two(PL) those(PL)} \\
\quad 'those two white dogs' \quad \text{(Fortescue 1984:118)}
\]

Other modifiers, such as relative clauses and adjectival compounds show similar agreement when modifying a head noun.

\subsection{Possessive Constructions in WG}

In possessive constructions, the possessor precedes the possessum. The possessum is marked for case and agrees with its possessor in person and number. The example in (5) demonstrates this agreement: the possessum \textit{ami-} ‘skin’ is marked with 3\(^{rd}\) singular agreement (matching its possessor \textit{qasigissa-} ‘harbor seal’) and is itself marked as singular. Possessors are marked with ergative case.\(^3\)

\[
(5) \text{ [qasigissa-p ami-a]} \\
\quad \text{panir-sima-su-q} \\
\quad \text{[harbor.seal-SG.ERG skin-3SG.SG.ABS]} \\
\quad \text{dry-PFV-INTR-3SG} \\
\quad 'The seal skin was dry.' \quad \text{(Sommer et al. 2005b:5)}
\]

Pronominal possessive constructions show the same type of agreement. In (6) the possessum \textit{qatanngut-} ‘sibling’ shows possessor agreement for 3\(^{rd}\) person singular ‘his’ and is marked as plural:

\[
(6) \text{ qatanngut-isa} \\
\quad \text{sibling-3SG.PL} \\
\quad 'his siblings' \quad \text{(Sommer, Berthelsen, & Holm 2007:6)}
\]

Pronouns are not obligatory but may appear for the purpose of emphasis.

\(^2\) The examples in (3) and (4) also show that the order of non-incorporated modifiers may vary. For an account of how these orders occur and are restricted, I refer the reader to Langr (2014).

\(^3\) Example (5) and subsequent examples follow the convention shown in WG texts (e.g. Fortescue 1984), where the possessor is marked first (here: 3SG) and possessed noun second (here: SG).
2.3 The Possessive Agreement Paradigm

Possessive morphemes, exemplified in (5) and (6), tend to be fused, which can mask the agreement patterns described above. However, outside of the 3rd person singular agreement shown in (5) it is possible to distinguish person and number agreement for the possessor and possessum. Take, for example, a selection of the agreement paradigm for possessed nouns appearing in the absolutive case (like the example in (5)):

(7) Table 1: Absolutive Morphology for Possessives

<table>
<thead>
<tr>
<th>Possessor</th>
<th>Singular Possessum</th>
<th>Plural Possessum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st SG</td>
<td>-ga</td>
<td>-kka</td>
</tr>
<tr>
<td>1st PL</td>
<td>-(r)put</td>
<td>-yut</td>
</tr>
<tr>
<td>2nd PL</td>
<td>-(r)sí</td>
<td>-__sí</td>
</tr>
<tr>
<td>3rd SG</td>
<td>-u __</td>
<td>-í __</td>
</tr>
<tr>
<td>3rd PL</td>
<td>-at</td>
<td>-i/at</td>
</tr>
</tbody>
</table>

Bolded, underlined portions indicate the differences between singular and plural possessed nouns. Empty underlines indicate that no overt morphology is present.

The pattern in Table 1 can be seen in example (8). In (8b), the possessive morpheme is realized as –ma (1SG.SG) rather than -ga as predicted in Table 1 due to WG assimilation properties.

(8) a. issi = eye (root)
    b. issima = my eye (SG. possessum)
    c. issíka = my eyes (PL. possessum)  ("Greenlandic to English Dictionary" n.d.)

Given the pattern seen here, I suggest that, contrary to the agreement ordering suggested by glossing patterns in WG texts, number marking of the possessum precedes possessor agreement on possessed nouns.

2.4 Possessive Agreement Patterns in WG: Evidence from Hungarian

The possessive agreement pattern I suggest in Section 2.3 is not uncommon; Hungarian, for example, exhibits the same type of possessive agreement as WG and the relative order of the relevant morphemes is the same as the order I suggest for WG. In the following examples, the
possession marker precedes the number marking of the possessum, which in turn precedes
possession agreement marking:

(9) a te kalap-ja-i-d
the you.NOM hat-POSS-PL-2SG
‘your hats’ (Szabolcsi: 1994:1)

(10) (a) Mari kalap-ja-i
the Mari.NOM hat-POSS-PL(-3SG)
‘Mari’s hats’ (Szabolcsi 1994:1)

The only difference seen between the Hungarian examples and the ones shown for WG is
the presence of a possessive marker -ja immediately following the possessum. As it turns out,
WG does have possessive markers such as this (POSS in the structure in (11)). However, these
only appear with constructions involving alienable possession:

(11) piniartu-p niqi-ut-aa
hunter-SG.ERG meat-POSS-3SG.SG.ABS
‘the hunter’s meat’ (Fortescue 1984:216)

I will return to possessive agreement in Section 4.

In this section I have presented the basic ordering and agreement patterns for WG noun
phrases and possessive constructions. Additionally, I have shown that agreement marking on
possessed nouns patterns with Hungarian in that it follows the ordering: nominal
root > (POSS) > number of possessum > possessor agreement. In the next section I briefly discuss
the implications of assuming a WG nominal structure that does not include a DP-layer.

3 Implications of a DP-less Structure

3.1 Variable Maximal Projections

Bošković (2005, 2008, 2012, and references therein) has extensively argued for an NP-analysis
of articleless languages, first in Serbo-Croatian (2005) and then crosslinguistically (2008) using a
set of criteria (one of which is polysynthesis). In addition, Compton (2004) argues directly
against a DP-analysis of the Inuktut branch of Inuit.

Taken at face-value, an NP-analysis of WG will need to posit additional functional
structure even if it does not involve a DP. For example, Compton (2004:24) proposes that

---

4 A peripheral observation: In (10) agreement with a third singular possessor exhibits null morphology (also
observed in WG, as shown above).

5 I do not provide a detailed application of Bošković’s criteria to WG, though see Norris (2014) for an account of
why they fail to hold in Estonian (an articleless language).
referentiality (a semantic feature normally inherent to D) might be handled in a little n projection, à la Marantz (2000). However, he has to posit Q(uantifier) and Dem(onstrative) heads above this projection to account for the occurrence of these elements. The possible structural contrast between (12a) and (13a) is represented as (12b) and (13b), respectively:

(12) a. iluliar-sua-q…
   ice.berg-big-SG.ABS
   ‘(the) giant iceberg…’
   (Sommer et al. 2005b:9)

b. [\_\_ iluliar-sua-q]

(13) a. qimmi-t  qaqurtu-t  taakku
   dog-PL  white-PL  those(PL)
   ‘those white dogs’
   (cf. Fortescue 1984:118)

b. [DemP [\_\_ qimmi-t  qaqurtu-t] taakku]

I do not oppose the existence of a DemP projection for demonstratives; in fact, I adopt Brugè’s (2002) analysis of a low DemP following the strong argument that a D-head is not needed for this purpose.

Under a Bošković-style approach, modifiers of the noun (including demonstratives, adjectives, and possessives) are either adjuncts or multiple specifiers of NP. In either approach, the number of allowable NP-specifiers needs to be relatively unconstrained, but these specifiers/adjuncts need to be ordered with respect to each other. An unlimited-specifier approach has a hard time explaining these ordering restrictions.

As I will show in Section 4, adopting a What-You-See-Is-What-You-Get approach to DPs need not be adopted at the expense of crosslinguistic uniformity. In the following section, I point out an issue with the NP-analysis of WG noun phrases.

3.2 Morphosyntax of Possessive Constructions

Compton (2004) does not suggest an analysis of possessive constructions in Inuktitut, leaving a hole in his argument for a no-D analysis of Inuit. On the other hand, Bošković-style approaches support an analysis of possessors in Serbo-Croatian whereby possessors and demonstratives are analyzed as adjectival elements, based on factors such as possessors exhibiting concord with the head noun/possessum:

(14) student-ov-a  knjig-a
    student-POSS-NOM.F.SG  book-NOM.F.SG
    ‘a/the book of the student’
    (Zlatić 2000:180)
The examples in (14) and (15) differentiate Serbo-Croatian possessives from WG in two ways: (i) as shown in (5) above, it is not the case that possessors show concord in WG and (ii) though a POSS marker is present, it occurs on the possessor rather than the possessum as in WG (example (11)). An analysis of WG possessors as adjectival modifiers cannot be upheld in the absence of the indicative concord marking and the difference in POSS marking.

In the next section I present an account of possessives that can account for the data as given in the preceding sections. I show that without a DP projection, possessor marking and the ordering of the possessive morphemes as shown in Section 2.3 remains problematic.

4 A DP Analysis of WG Possessives

4.1 Basic WG DPs

I propose that the structure of a basic noun phrase in WG has three projections: NP, NumP (independently motivated by Ritter 1991 and others), and DP. Each head is associated with a distinct set of interpretable features; interpretable (iP)\(^7\) and uninterpretable number (uNum) on N, interpretable number (iNum) and uninterpretable person (uP) on Num, and uninterpretable definiteness (uDef)\(^8\), person, and number on D.

For a DP such as (16), the derivation proceeds as in (17). In (17a) the N and Num heads merge with their given (un)interpretable features; the interpretable instances of features value the uninterpretable ones via feature-sharing (Frampton and Guttman 2006; Pesetsky and Torrego 2007)\(^9\). At the merge of D in (17b) the number and person value their uninterpretable instances once more. In (17c) uDef is valued as indefinite as default:

(15) mam-in-og  brata-a  
mom-POSS-GEN.M.SG  brother-GEN.M.SG  
‘of the mother’s brother’  (Zlatić 2000:179)

---

6 See also Norris (2014) for an account of Estonian that disproves such an analysis of possessors.
7 There exist arguments for person being a feature of D rather than N (Abney 1987; Carstens 2000, 2001; Danon 2011; Postal 1969); I argue that person appears in N, following Pereltsvaig’s (2007) argument for Russian (an articleless language) that pronouns (inherently linked to person) merge in N and may raise to D.
8 I suggest definiteness is uninterpretable on D because it may be valued by DP-internal factors (e.g. demonstratives) and DP-external factors (e.g. focus/topicalization). DP-external valuation can be the result of the DP’s location in larger syntactic structure (CP or vP), much like Diesing’s (1992) for German scrambling and Biskup (2006, 2009) for Czech scrambling.
9 The structures presented here are also compatible with a Multiple Agree approach (Hiraiwa 2001) and Concord (Carstens 2000, 2001).
With this basic structure in place I move to possessive DPs.

4.2  WG Possessive DP Structure – Initial Analysis

In order to account for the possessive data, I suggest that there is a PossP projection within the possessive DP immediately below DP (Anderson 1983-84; Longobardi 1994; Ritter 1991; Siloni 1997). It is in the specifier of the PossP projection that the possessor merges and receives its possessive (ergative) case. I assume inherent assignment of ergative case in this position based on parallels between possessors and ergative subjects in WG (Aldridge 2008 and references therein; Fortescue 1995).

An initial possessive structure (to be revised) for the example in (18) is derived in (19). In (19a), we see the merge and feature-sharing of NP and NumP as shown in Section 4.1. The PossP projection is merged in (19b), its specifier being the merge site of the possessor. Finally, in (19c), the D head merges and probes for the closest person and number features available (those of the possessor DP):

\[
\begin{align*}
(18) & \quad \text{Sacajaweap} & \quad \text{uqasiq-isa} & \quad \text{Naya Nuki aliagi-tsgitpqipa-at} \\
& \quad \text{Sacajaweap.SG.ERG} & \quad \text{word-3SG.PL.ERG} & \quad \text{N.Nuki be.sad.about-IND.TR-3PL.3SG}^{10} \\
& \quad \text{‘Sacajawe’s words} & \quad \text{made Naya Nuki feel very sad.’ (Thomasma 2007:22)} \\
\end{align*}
\]

\(^{10}\) Verbal gloss has been simplified.
The feature-sharing of the possessor DP with D allows for the observed morphological representation of possessive agreement: we now have an explanation for why possessor features appear on the possessum. Additionally, the ordering of features that appear in the possessive morpheme can be explained: the number of the possessed noun precedes the person and number of the possessor.

What remains is an explanation of why the possessor does not trigger verbal agreement; for example, what causes the features of the possessed nominal rather than the possessor in (18) to agree with the verbal complex (underlined in (18))? In the next section I discuss existing explanations of agreement and propose an account for WG.

### 4.3 Accounting for Verbal Agreement

#### 4.3.1 Previous Approaches

Historically, there appear to be two types possibilities explaining verbal agreement with a possessed noun in a language showing WG-style agreement: head movement and/or a DP-internal agreement projection. The former has been assumed for WG (Bittner and Hale 1996), while the latter has been suggested for Hungarian (Den Dikken 1999).

Bittner and Hale (1996) propose an account of WG whereby possessors and possessed nouns are part of a nominal small clause; the possessor is the subject and the possessum is the head of the small clause. Spec-head agreement takes place, allowing both the features of the possessor and the possessed noun to appear on the head noun. The head moves out of the small clause and incorporates into D:
Unfortunately the possessor-possessum features are bundled into one indistinct group on D, obscuring the features specific to the head noun (which is required for verbal agreement).

For a few reasons, Bittner and Hale’s account is not ideal. First, the assignment of ergative case is dependent upon a syntactic relation rather than being inherent to a head, indicating that under this approach ergative is a structural rather than an inherent case (contra the account presented here). Second, though Spec-head agreement can account for the morphology, the mechanism by which the bundled features on D can produce correct case assignment and verbal agreement is unclear.

Den Dikken (1999) also suggests a small-clause approach to possessives but for Hungarian rather than WG. For Den Dikken, the possessed noun is the head of the small clause (as in Bittner and Hale) but the possessor originates inside the PP complement to the head:

\[(22) \quad [SC \text{ Possessum } [PP_{\text{dat}} \text{ Possessor}]] \quad (\text{Den Dikken 1999:153})\]

In order to derive the Hungarian order of possessor preceding possessed noun, the possessor undergoes Predicate Inversion:

\[(23) \quad \text{a. } [DP \ D [SC \text{ Possessum } [PP_{\text{dat}} \text{ Possessor}]]] \]
\[\text{b. } [DP \ D [FP [PP_{\emptyset} \text{ Possessor}]; F [SC \text{ Possessum } ti]]]] \quad (\text{cf. Den Dikken 1999:154})\]

Agreement of the possessor with the possessum proceeds by the Spec-head agreement of a resumptive pronoun in SpecFP with the possessum. Possessum agreement with the verb obtains via D.

---

11 There are, of course, arguments that ergative is in fact a structural case, eg. Coon and Salanova (2009).
My proposed construction has an observable parallel to Den Dikken’s construction. First, his FP/AgrP is in the same location as my proposed PossP, and the possessor (PP for Den Dikken) is located in its specifier, like my ergative possessor. The primary differences lie in (i) the fact that my possessor does not originate low in the structure as the predicate inside the small clause and (ii) the fact that I do not posit Spec-head agreement.\(^\text{12}\)

In the next section I make use of observations from both Bittner and Hale (1996) and Den Dikken (1999) to suggest a mechanism by which possessives may agree with the verb while maintaining the integrity of the structure proposed in Section 4.2.

### 4.3.2 Applying Previous Accounts

Following the insights of Bittner and Hale (1996), here I test the possibility of using head-movement to explain WG possessive constructions.

Given the structure in (19c) above, we can make use of head movement to derive the correct ordering of the features on D. First, the head noun moves from N to Num (24a); the complex head then moves from Num to Poss (24b) and then the whole complex from Poss to D (24c).\(^\text{13}\)

\[12\] Den Dikken must also make use of a resumptive pronoun strategy to account for a split between Nominative/Dative possessor number agreement. Since WG does not show such a split, I do not require such an account.

\[13\] I use \(u\Phi[\text{valued}]\) as a shorthand reference to the features shared between the possessor DP and D-head.

---

\[^{279}\]
Alas, however, we still run into issues when it comes to agreement because our D head now has two sets of Φ-features; additionally, the possessor features are where we would expect the agreeing noun to be located.

The structure in (24) also reveals an issue of ordering at the level of the Poss head. Recall example (11), repeated here, which shows that possessive markers do exist in WG:

(25) piniartu-p niqi-ut-aa
     hunter-SG.ERG meat-POSS-3SG.SG.ABS
     ‘the hunter’s meat’ (Fortescue 1984:216)

Logically, a POSS marker is expected to be part of the Poss head. But when we examine the order of elements on Poss in (24b) the derived order is possessum number > (POSS) > possessor agreement.

While this observation is problematic for a head-movement approach, it lends benefit to a DP-argument in general. If we were to take a DP-less approach to possessives and PossP were the maximal projection, with possessor agreement being the result of Spec-head agreement, it would not be possible to derive the correct order at all: the possessum features would always precede the Poss marker.

In the next section, I abstract away from a head-movement/spec-head agreement approach and suggest that the problem does not reside with the structure itself but rather the timing and mechanisms of agreement.

### 4.3.3 Two Types of Agreement

One feature that Bittner and Hale (1996) and Den Dikken (1999) share is that each approach to possessives involves two types of agreement; this similarity should not go unnoticed. For Bittner and Hale, we have Spec-head agreement followed by case assignment; for Den Dikken we have (presumably) some sort of concord operation (allowing the matrix nominal’s features to be part of D or Agr) followed by Spec-head agreement. In either case, each mechanism is independently
motivated. Comparatively, in what I have proposed so far, we only have one mechanism: feature-sharing. The data and previous accounts lead us to believe that we are one mechanism short.

Norris (2012) observes that possessor agreement and concord (here: feature-sharing) appear to be two distinct phenomena. Finnish, a language which, like Hungarian and WG, marks possessors as genitive (here: ergative) and has possessum agreement with the possessor, exhibits concord throughout DPs but does not allow possessor agreement to extend to the remainder of the DP as in (27):

(26) iso-ssa talo-ssa-ni
    big-INE house-INE-POSS.1SG
  ‘in my big house’
(27) *iso-ni talo-ni
     (Norris 2012:212)

WG exhibits this same phenomenon:

(28) illu-ga mikisu-q
    house-1SG.SG little-SG
  ‘my little house’
     (Fortescue 1984:109)

In both examples, only the possessum is marked for agreement with the possessor (even though the modifying adjective agrees with the possessum in Φ-features).

According to Norris’ analysis of concord, the highest head of a DP is KP (as in Bittner and Hale’s approach as mentioned above), which probes for gender and number features in an Agree-like manner and receives case by a standard case-assignment mechanism. The gender, number, and case features present on K are copied to Agr nodes associated with the heads that show agreement, such as the adjectival head in (26). Thus concord is distinct from argument-predicate agreement.

The proposal I present in the following paragraphs is similar to Norris’ in that it recognizes the distinction between possessor agreement and concord. I depart from Norris’ analysis in the particular mechanism responsible for feature-distribution. Instead of positing a collective head K that redistributes features, I suggest feature-sharing simply precedes possessor agreement.

Given that the possessum features are shared throughout the DP prior to agreement with the possessor, we anticipate that the mechanism causing possessor DP agreement with the possessum occurs after feature-sharing operations. What this means for the structures I have proposed is that the features on D in (19c) should be shared with the features of the matrix nominal/possessum; the fact that the separate features of D do not agree with a Φ-complete, case-assigned possessor is intuitively anticipated. Then, a separate mechanism causes D to probe for the possessor features in SpecPossP.
The structure in (29) is a revision of the one in (19). (29a) shows the agreement of the possessum features with the features of D, while (29b) shows the probing mechanism (equivalent to standard Agree) selecting the features of the DP in PossP (indicated by double-lines):

(29) a.

```
  D
   | uDef[def]
   | uP[3]
   | uNum[pl]
```

```
  Poss'
```

```
  NumP
   | uNum[sg]
   | SACAJAWEA
```

```
  NP
   | iNum[pl]
   | uP[3]
   | _WORD
```

b.

```
  D
   | uDef[def]
   | uP[3]
   | uNum[pl]
```

```
  Poss'
```

```
  NumP
   | uNum[sg]
   | SACAJAWEA
```

```
  NP
   | iNum[pl]
   | uP[3]
   | _WORD
```

This post feature-sharing probing mechanism explains the morphosyntactic patterns discussed in Section 2.3 as well as the absence of possessor agreement on modifiers. What remains is D’s motivation to probe for possessor features.

The answer to this question may lie in the verbal domain. An approach to possessor agreement that is separate from concord/feature-sharing helps to capture the well-known parallel between possessors and subjects. Given this parallelism, possessive DPs can be considered ‘transitive’ in a sense, requiring D to probe for two sets of features. Devising such a mechanism for D would require careful comparison of DP and verbal agreement phenomena and is beyond the scope of this paper. Given the argument so far, however, such an agreement mechanism is not an unreasonable assumption.

Before concluding, I must address one final question: why does the possessor appear in the SpecPossP rather than SpecDP? Though there does not appear to be a pressing reason to have SpecDP available (e.g. for purposes of extraction – it does not seem to be the case that DP-internal elements can precede the possessor), I suggest that leaving this specifier available might explain the allowance of, for example, ‘appositional’ modifiers of the noun phrase. In the example in (30), the noun qisuk ‘wood’ could reside in SpecDP, modifying the entire possessive construction:
Qisuk ‘wood’ is unmarked (or arguably marked with default 3rd singular absolutive, but nothing leads Fortescue to believe this is the case) but still clearly related to the possessive construction.

In this section I have presented an account of WG possessives that allows the observed possessor agreement to appear on the possessum while not inhibiting possessum agreement with the verbal complex. Though the precise mechanism of the former type of agreement is not immediately apparent, it does appear to be the case that two distinct mechanisms exist – even if only to delay the agreement of the possessor with D.

5 Conclusion

In the preceding sections I have argued for an account of the West Greenlandic possessive noun phrase that supports the existence of a DP projection in the language. I first demonstrated how a DP account of WG can explain the appearance of possessor agreement on possessive morphemes (attached to the possessum). Then I discussed how previous accounts of possessor agreement are not quite compatible with the current theoretical assumptions. Finally, I made use of the observation that two types of agreement are necessary to account for possessive agreement in the nominal domain. By separating feature-sharing and possessor agreement, we are able to account for possessive DP agreement with the verbal domain.

Possessive agreement is just one argument for the existence of DP in West Greenlandic; however, as I have shown, the agreement patterns shown in West Greenlandic possessives are difficult to explain with an NP-only structure.

6 References

BOŠKOVIĆ, ŽELJKO. 2008. What will you have, DP or NP? Proceedings of 37th Conference of the North East Linguistic Society, Amherst.


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The Pragmatics and Syntax of German Inalienable Possession Constructions

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1 The Phenomenon and Previous Syntactic/Pragmatic Analyses

The prototypical inalienable possession construction in German has a dative (DAT)-marked external possessor:

(1) Bello hat mir die Hand geleckt.
    Bello has me.DAT the hand licked
    ‘Bello licked my hand.’

This is an instance of external possession because the understood possessor of the body part, the possessum, is expressed outside of the nominal phrase containing the possessum, showing up as an object pronoun (mir ‘me.DAT) in the verbal argument domain.1 Notice that the literal translation of the dative does not work in English. This is because English generally prefers internal possessors and thus makes use of the possessive pronoun my rather than the object pronoun me in examples like (1) (see e.g. Haspelmath 2001, König and Gast 2012).

In German inalienable possession constructions with a PP-embedded possessum, there is considerable variation between the prototypical possessor dative construction and four others, so that there are a total of five different construction types: external possession with a dative-marked possessor (2a), external possession with an accusative (ACC)-marked possessor (2b), internal possession, with a genitive (GEN)-marked possessor (3), and doubly-marked possession, with both external and internal possessor, where the external possessor is again either dative-marked (4a) or accusative-marked (4b).2

(2) a. Bello hat mir in die Hand gebissen.
    Bello has me.DAT in the hand bitten
    ‘Bello bit me in the hand.’

b. Bello hat mich in die Hand gebissen.
    Bello has me.ACC in the hand bitten
    ‘Bello bit me in the hand.’

1 For an overview of external possession constructions, see Payne and Barshi (1999) and Deal (to appear).
2 See Wegener (1985) for a thorough description of German external possession involving the dative case as well as the observation that dative and accusative can alternate in construction type (2). The case alternation has also been discussed by Hole (2005).
Interestingly, when it comes to constructions with a PP-embedded possessum, English looks just like German in that it also makes use of external possession (see (2a-b)). According to König and Gast (2012:149), use of external possession in English is limited to constructions with adjunct PPs. The German construction types in (3) and (4) are less readily acceptable out of the blue (and are considered non-standard) but do not stand out as degraded if used in certain contexts or for certain purposes, as we will show in later sections. Before focusing on the marked constructions in (3) and (4), the remainder of this introduction discusses some prior positions concerning the case alternation in (2a-b).

As laid out in Lee-Schoenfeld (2012) and Lee-Schoenfeld and Diewald (2013), the case alternation in (2a-b) is found with verbs that allow a simple transitive valency frame (see (5)) as well as a directional one (see (6)). Commonly occurring examples of such verbs are *beißen* ‘bite’, *schlagen/hauen* ‘hit’, *boxen* ‘box/punch’, *treten* ‘kick/step’, and *kneifen/zwicken* ‘pinch’.

(5) Der Hund hat den Postboten gebissen.
the dog has the.**ACC** mailman bitten
‘The dog bit the mailman.’

(6) Der Hund hat ins Körbchen gebissen.
the dog has into.the **basket** bitten
‘The dog bit into the basket.’

Crucially, with or without PP, these verbs have an inherent endpoint (are telic), and it is precisely the availability of the directional valency frame, i.e. the verb’s intransitive use with a goal PP indicating the endpoint of the directed motion, that makes it possible to have a dative external possessor. The basic syntactic analysis of the dative/accusative case alternation in external possession constructions like (2) is summarized in Table 1.

---

3 The DP *meine Hand* ‘my hand’ as a whole is **ACC**-marked by the P *in*, but the 1st person pronoun in Spec DP becomes the possessive pronoun *mein-* ‘my’ via GEN-marking.
Draye (1996) and Lamiroy and Delbecque (1998) propose an affectedness account of the dative/accusative case alternation in order to capture its pragmatic motivation. The claim is that the more “affected” the external possessor, the more likely it is accusative-marked. For a detailed discussion arguing against this claim, see Lee-Schoenfeld (2012). Here, we add to this discussion by pointing out that there are different uses of the term “affected”, namely to mean (a) ‘being directly acted upon or influenced, as opposed to being in control, not necessarily animate’ (see e.g. Lehmann et al. 2004), i.e. having features of a typical patient versus (b) ‘taking part in the situation as an empathetic, necessarily animate co-participant’, i.e. sharing some features of a typical agent, without, however, being an agent because not having control (see e.g. Hole 2005, Lee-Schoenfeld 2006, 2007, McIntyre 2006, and Pylkkänen 2008). Given the use of “affected” with meaning (a), more affectedness should mean choice of accusative because (a) describes what is typical of the participant that is the verb’s direct object, but given the use of “affected” with meaning (b), more affectedness should mean choice of dative because (b) describes what is typical of the participant that is the verb’s indirect object (a recipient of bene/maleficiciary). The next section will discuss the labeling of participants and their features in more detail and will help dispel this terminological confusion.

The research goals of this paper are (i) to verify the existence and distribution of the five alternative constructions for expressing inalienable possession by a first overview of their actual usage in various linguistic contexts, (ii) to explore their differences in meaning and function with respect to text type/register and further pragmatic features derived from typologically relevant characteristics, and (iii) to clarify the case variation between dative and accusative, which is relevant for four out of the five constructions. Our intuition concerning the case alternation (in contrast to Draye’s 1996 and Lamiroy and Delbecque’s 1998) is that, while accusative-marking of the possessor is preferred for neutrally describing the scene (who did what), dative-marking of the possessor is preferred for drawing attention to the situation of the possessor, i.e. for putting oneself in his/her position.

The remainder of the paper is structured as follows: Section 2 brings in typological findings by Lehmann et al. (2004) concerning general tendencies of encoding possessors. Section 3 establishes what the actual empirical situation is regarding the variation in (2)-(4) with the help of internet and corpus searches and discusses the data in light of our research goals. Section 4 concludes the paper.
In order to capture the peculiarities of the possessor dative in German, it is useful to broaden the view and take into account some fundamental considerations offered by typological research on argument structure in general, and the possessor dative in German in particular. We take up suggestions by Lehmann et al. (2004), who, building on earlier models (Comrie 1991, Croft 1991, Foley and Van Valin 1984, Langacker 1991, and also Dowty 1991), argue for three macro roles for participant relations: ACTOR, UNDERGOER, and INDIRECTUS, distinguished by the relational features control and affectedness. Most relevant for us is the INDIRECTUS, which has neither maximum control nor maximum affectedness but is maximally empathetic and embodies “co-involvement” (‘Mitbetroffenheit,’ Lehmann et al. 2004:18), a term, which might help in disentangling the problems associated with the term “affectedness”. Macro roles can each be broken down into several micro roles (= thematic roles). The micro role associated with ACTOR that has the most control is AGENT, and the micro role associated with UNDERGOER that has the most affectedness is PATIENT. Most typical of INDIRECTUS, falling in the middle of the scale of micro roles, is the role of RECIPIENT. The role of SYMPATHETICUS, which is crucial for inalienable possession, falls into the range of micro roles associated with both INDIRECTUS and UNDERGOER. Lehmann et al. (2004:19) suggest the following linear ordering of the typologically most important micro roles: AGENT – FORCE – COMITATIVE – INSTRUMENT – EXPERIENCER – EMITTENT – RECIPIENT – BENEFICIARY – SYMPATHETICUS – SOURCE – LOCATION – GOAL – THEME – PATIENT. The three locative roles (SOURCE, LOCATION and GOAL) are omitted in the following as they are not needed for our argumentation.

The large area of overlap between the ranges of micro roles covered by each macro role is evident from the scales of possible micro roles in Table 2. The prototypical micro roles for each macro role are underlined. As the macro role of INDIRECTUS covers the intermediate space on the scale between ACTOR to UNDERGOER, its prototypical realization as RECIPIENT allows for less prototypical extensions toward both ends of the scale (toward the ACTOR pole via EMITTENT, and towards the UNDERGOER pole via BENEFICIARY).

Table 2: Overview of macro and micro roles (Lehmann et al. 2004:19)

<table>
<thead>
<tr>
<th>Macro roles</th>
<th>Micro roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTOR</td>
<td>AGENT &lt; FORCE &lt; COMITATIVE &lt; INSTRUMENT</td>
</tr>
<tr>
<td></td>
<td>EXPERIENCER &lt; EMITTENT &lt; RECIPIENT &lt; BENEFICIARY</td>
</tr>
<tr>
<td>UNDERGOER</td>
<td>PATIENT &lt; THEME &lt; SYMPATHETICUS &lt; BENEFICIARY</td>
</tr>
<tr>
<td></td>
<td>RECIPIENT &lt; EMITTENT &lt; EXPERIENCER</td>
</tr>
<tr>
<td>INDIRECTUS</td>
<td>EXPERIENCER &lt; EMITTENT &lt; RECIPIENT &gt; BENEFICIARY &gt; SYMPATHETICUS</td>
</tr>
</tbody>
</table>
In languages distinguishing three macro roles and using case-marking, the correlation between participant role and case marking results in the typical ditransitive pattern: ACTOR is correlated with nominative, UNDERGOER with accusative, and INDIRECTUS with dative.

The roles described so far express participant relations, i.e. relations defined by the situational core (encoded in the predicate). However, according to Lehmann et al. (2004), there are also interparticipant relations, i.e., relations between individual participants that are independent of the primary situational core. Thus, any participant may simultaneously carry several roles, deriving either from the situational core (participation relation) or from an independent connection among entities functioning as participants (interparticipant relation). The most important interparticipant relation for our purposes here is possession. In a sentence like *Erna wäscht Erwin die Haare* ‘Erna is washing Erwin’s hair’ (Lehmann et. al 2004:52/21), there is an inalienable possession relation between *Erwin* as the possessor and *die Haare* as the possessum. This relation exists independently of the situation expressed by the predicate, namely the situational core (*waschen*), which consists of the participant relations AGENT (*Erna*), PATIENT (*die Haare*), and BENEFICIARY/SYMPATHETICUS (*Erwin*).

In German, the INDIRECTUS, which is – as expected – marked by the dative, has an exceptionally broad domain of associated micro roles. This is particularly true of possessive relations, where German prefers dative constructions to an extent that is typologically rare. More specifically, while German prefers external (“adverbal”) possession, as shown in (7), with the possessor dative as a direct participant in the situational core, inalienable possession in the majority of languages is expressed via internal (“adnominal”) possession. Adnominal possession is also a possibility in German, as we saw in (3) of the introduction and as shown here in (8).

(7)  
a. Ich wasche mir die Hände.  
I wash me.DAT the hands  
‘I wash my hands.’

b. Er trägt mir / (der) Susanne die Schleppe.  
he carries me.DAT / (the.DAT) Susanne the train  
‘He carries my/Susanne’s train (the train of her dress).’

(8)  
a. Ich wasche meine Hände.  
I wash my hands  
‘I wash my hands.’

b. Er trägt meine / Susannes Schleppe.  
he carries my / Susanne’s train  
‘He carries my/Susanne’s train (the train of her dress).’

To reiterate, the prototypical German strategy for expressing inalienable possession is the realization of an adverbal possessor, which makes the possessor a direct participant of the
situation (as BENEFICIARY/SYMPATHETICUS). It backgrounds the possession relation, which is merely the result of pragmatic inferencing, though it is the stereotypical inference. That is, in (7b), mir...die Schleppe, the possession relation between me as the possessor and the train as the possessum, which is the standard interpretation, is not explicitly expressed but inferred. On the other hand, the typologically unmarked strategy qua adnominal possessor in (8b), er trägt meine Schleppe, is dispreferred in German. It backgrounds the participation of the possessor as playing an independent role in the verbal scene, putting emphasis on the possession relation, which is explicitly encoded.

In addition to these two options, there is a third strategy, as we saw in (4) of the introduction and as illustrated in (9) here, which combines the first two strategies and therefore leads to a “double encoding” of the possessor via the optional addition of a possessive pronoun to an already externally expressed possession relation. This option is cross-linguistically marginal and also the least commonly used one in German.

(9) a. Ich wasche mir meine Hände.
   I wash me.DAT my hands
   ‘I wash my hands.’

   b. Er trägt mir / (der) Susanne meine/ihre Schleppe.
   he carries me.DAT / (the.DAT) Susanne my/her train
   ‘He carries my/Susanne’s train (the train of her dress).’

The three strategies of expressing possession in German discussed in this section are summarized here in Table 3.

---

4 Our use of the term “strategy” is inspired by Lehmann et al. (2004:27) who define “strategy” as ‘the sum of co-occurring operations for the generation of a type of syntactic construction’. The full German quote is: “Das strukturelle Gegenstück einer Perspektive auf eine Situation ist eine Strategie zu ihrer sprachlichen Repräsentation, also eine Menge kookkurrenter Operationen zur Erzeugung eines Typs von syntaktischer Konstruktion”. Lehmann et al. distinguish, for example, strategies that emphasize interparticipant relations and at the same time de-emphasize participant relations (e.g. the genitive possessor in Sie bügelt Peters Hemden ‘She irons Peter’s shirts’), from others having the opposite effect (e.g. the external possessor construction). They use the term “strategy” for cross-linguistic and typological comparison; we apply it here to the encoding options of the German language.
The dative/accusative variation in the external possessor, which we saw in (2a-b) and (4a-b) of the introduction, can be seen as a fourth strategy, which is, however, severely restricted by lexical and other factors. To explain the motivation for this variation, we appeal to Lehmann et al.’s (2004:57) discussion of different degrees of analogous affectedness. In situations with analogous affectedness (Erna schlug Erwin (ACC/DAT) auf den Kopf ‘Erna hit Erwin on the head’ > Erna schlug Erwin ‘Erna hit Erwin’), the possessor plays the role of a SYMPATHETICUS and, via implication, acquires the role of a PATIENT as well. In situations with non-analogous affectedness (Erna brach Erwin (DAT) den Arm ‘Erna broke Erwin the arm’ // "Erna brach Erwin ‘Erna broke Erwin’), the possessor is only a SYMPATHETICUS, not also a PATIENT.

Extending Lehmann et al.’s discussion, we argue that the use of an accusative-marked possessor in the external possessor construction expresses possessor and possessum (the PATIENT) as analogously affected, i.e. the possessor is also seen as PATIENT (this goes with meaning (a) of “affectedness” in section 1). The use of a dative-marked possessor, on the other hand, draws attention to the possessor as a SYMPATHETICUS, a direct participant of the situation whose involvement is independent of the PATIENT (this goes with meaning (b) of “affectedness” in section 1, where we have co-involvement/co-participation of an animate entity). Thus, dative-marking should express more empathy for the possessor than accusative-marking. This predicts that the dative/accusative variation found in our data is indeed not random or arbitrary but a consequence of stylistic or expressive choice – given that the syntactic conditions concerning accessible valency frames are met.5 As stated in the introduction, our intuition is that a dative-
marked possessor is used for drawing attention to the situation of the possessor, while an accusative-marked possessor is used for neutrally describing the situation (who did what).

To wrap up this section, German allows for the possibility of the possessor participant to be furnished with one or more of the micro roles associated with the INDIRECTUS. As the INDIRECTUS has a broad range of associated micro roles, the potential for various more specific interpretations of the micro role(s) is particularly large, depending on the situation type. For the expression of possession relations, strategy 1 together with a dative-marked external possessor is the unmarked case (= example (2a)), with the others being used, whenever a particular type of foregrounding and backgrounding between possession relation and participant relation is preferred.

Based on the reflections presented so far, we can now add some specifications to our goals stated at the end of section 1. As a specification of goals (ii) and (iii), we assume that for a comprehensive description of inalienable possession constructions in German, the following three pragmatic features, which can be seen as a condensed notation of the strategies described above, are useful: defocusing, expressiveness and objectivity. By defocusing, we refer to the reduction of the participant status of the possessor, i.e. the constructions in (2a-b) receive the feature value [−defocusing], while the internal possession construction receives the feature value [+defocusing]. By expressiveness, on the other hand, we refer to the process of exceeding the default value by being more explicit and using more linguistic material than necessary. As the default method for expressing inalienable possession in German is the external possessor construction (both variants (2a) and (2b)), it receives the feature value [−expressive], while the doubly-marked constructions in (3a-b) receive the feature value [+expressive]. Finally, objectivity is used here to label the effect of the case variation in the external possessor: the dative-marked external possessor receives the feature value [−objectification], while the accusative-marked external possessor receives the feature value [+objectification]. We assume that the feature grid of each single usage of an inalienable possession construction is interpreted for a variety of textual and pragmatic functions. The next section presents a first test for our model on the basis of an empirical investigation.

3 The Empirical Situation

Section 3.1 reports on the results of a pilot search we conducted via Google; section 3.2 describes the methodology and results of two extensive corpus searches, one of a written and the other of a spoken corpus of modern German, as well as further extensive search via Google; and section 3.3 interprets the results.

3.1 Pilot Search

We used Google for a first exploratory random search, entering search strings like in […] Nase heißen/gebissen/biss ‘in […] nose bite/bitten/bit’ (e.g. in die/seine/ihre Nase gebissen ‘in dative/accusative alternation.

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the/his/her nose bitten’) and categorized our findings as shown in Table 4. We include one or two hits per example type.

Table 4: Sample hits of pilot search

<table>
<thead>
<tr>
<th>Example Type</th>
<th>Sample Hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Hallo, bin neu hier und muss gleich mein Problem los werden...mein kleiner Pascha (3 Monate alter Jack-Russell-Terrier) hat mich gestern in die Nase gebissen. Zuerst haben wir wie immer total lieb miteinander gespielt, [...]. Dabei hab ich mich etwas zu ihm herab gebeugt und Pascha sprang hoch und biss mir in die Nase. Ich musste sogar zum Arzt, da es so stark geblutet hat. ‘Hello, am new here and have to share my problem right away…my little Pascha (3-month-old Jack Russell Terrier) bit me (ACC) in the nose yesterday. First we played nicely as always, [...]. At that point I bent down to him a little bit and Pascha jumped up and bit me (DAT) in the nose. I even had to go to the doctor because there was so much bleeding.’ (<a href="http://www.dogforum.de/hilfe-mein-hund-hat-mich-in-die-nase-gebissen-t57915.html">http://www.dogforum.de/hilfe-mein-hund-hat-mich-in-die-nase-gebissen-t57915.html</a>; 21.08.2008 20:25)</td>
</tr>
<tr>
<td>B.</td>
<td>ist ihnen auch schon aufgefallen, oder wussten sie schon, dass 10 monate alte säuglinge mit nur vier zähnen trotzdem richtig fest in ihre nase beißen können? ‘have you noticed, or do you happen to know already, that 10-month-old infants with only four teeth can nonetheless bite into your nose really hard?’ (<a href="http://lamamma.twoday.net/stories/11497757/comment">http://lamamma.twoday.net/stories/11497757/comment</a> 19.12.2010 19:17)</td>
</tr>
</tbody>
</table>
thing that happened. […]’


<table>
<thead>
<tr>
<th>C. “Doubly-marked” possessors: Combined external and internal possession</th>
</tr>
</thead>
</table>
| (i) *Heute bekommst ihr endlich Post von Kathy. Ich wohne jetzt schon 2 Wochen bei den Harder’s, und fühle mich dort echt wohl. [...] Ach ja, mein „Freund“ Jakob... der Alexandersittich. Als ich ihn fangen wollte, **hat er mir in meine Nase gebissen.** Das hat so wehgetan, dem gehe ich lieber aus dem Weg. [...]* ‘Today you are finally getting mail from Kathy. I have been living with the Harders for two weeks now and feel really comfortable there. [...] Oh, yes, my “friend” Jakob … the [type of parakeet]. When I wanted to catch him, he bit me in my nose. That hurt so badly, I better avoid him. […]’

(http://www.lichtblickfür4pfoten.de/post-von-ehemaligen.html; 30.01.2012)

| (ii) *„Eine Wiese voller Blumen! Sie riechen gut, aber ganz anders als du! Und wer seid ihr?“ Vorwitzig steckte das Kitz seine Nase in den Hügel, der unter einem der großen Bäume stand. „Aua, aua, was macht ihr denn? Lasst das! Wieso beißt ihr mich?“ [...] „Ich wollte sie doch nur kennen lernen, aber sie haben **mir in meine Nase gebissen!**“ Vorsichtig steckte das Rehkind die malträtierte Schnauze zwischen die Zweige des kleinen Baums.* ‘“A lawn full of flowers! They smell good, but very different from you. And who are you?” The fawn cheekily stuck her nose in the mound that stood was one of the big trees. “Ouch, ouch, what are you doing? Stop that! Why are you biting me?”[…] “I only wanted to get to know you, but you bit me into my nose!” Carefully, the deer youngling put its maltreated snout between the branches of the small tree.’

(http://www.fanfiktion.de/s/50d8881d0001ab2b0c907530/1/Der-Baum; 24.12.2012)

As the hypothesized four strategies based on Lehmann et al. (2004) predict, the empirical situation points to high variability and a very flexible application of the basic morphosyntactic patterns. The default construction with an external dative-marked possessor is represented twice, in the second instance of A (i), and in the first instance of B (ii). These two examples involve the features [−defocusing], [−expressive], [−objectification]. The justification for that becomes very clear when we look at the other marked, non-default constructions, which – as can be seen in A and B – occur alternatingly with the default construction in one and the same text. We cannot
present a comprehensive analysis here, but we provide at least some support for our assumption of the semantic-functional differentiation between the constructions.

Example A (i) supports our intuition concerning the dative/accusative alternation that accusative-marking of the possessor is used when the possessor’s involvement is neutrally stated, and that dative-marking of the possessor is used when the addressee is supposed to take the possessor’s perspective as an empathically involved participant. In the example, the possessor is the speaker/writer, and the text is a personal account. The first two instances of external possession are accusative external possessors (*mich*), and they occur in the headline (here seen in the name of the link below the example) and initial statement of the facts, when the audience does not know the speaker/writer yet. The realized features in these constructions are [−defocusing], [−expressive], and [+objectification] and account for the textual effect of these two instances of external possessors (stating the full-blown situation by introducing all participants, avoiding expressiveness, reducing “subjective” co-involved participants by choosing the accusative case for the possessor and thus objectivizing this participant, emphasizing its patient features, i.e. its analogous affectedness as the bitten entity in the biting scene). The third instance of an external possessor in A (i) has dative marking (*mir*), and, at this point, the account is more personal. The audience knows the speaker/writer better and feels for her. Here, the speaker/writer can rely on the default construction with all three features displaying the unmarked value, i.e. [−defocusing], [−expressive], and [−objectification].

In example B (i), where we have an internal possessor, associated with the features [+defocusing], [−expressive], [Ø objectification], the possessor is the addressee/reader. The speaker/writer makes a generic statement about the nose-biting behavior of 10-month-olds and addresses the reader using the polite form of address (*Ihre Nase* instead of *eure Nase* ‘your nose’). Here, the distance between the speaker/writer and the audience seems even greater than in the instances of accusative external possession in A (i). The addressee is not emphasized as a co-involved participant in the biting scenario, only as possessor of the nose.

Interestingly, both examples C (i) and (ii), where we have doubly-marked possession, i.e. the features [−defocusing], [+expressive], [−objectification], are from texts (a letter and a fictional piece of writing, respectively) in which animals speak. The first example is a quote from a dog, and the second is a quote from a baby deer. This is a first indication of the relative marginality of the doubly-marked possession construction, which obviously is associated with communicative situations of a somewhat “overexpressive” kind of emphasis. As our main corpus search results listed in the following subsection show, this construction is indeed rare.

3.2 More Extensive Corpus Work

Our pilot search helped us isolate five verbs for our search strings: *beißen* ‘bite’, *boxen* ‘box’, *hauen* ‘hit’, *schlagen* ‘hit’, and *treten* ‘kick/step’. Other verbs participating in the dative/accusative alternation do not occur frequently enough (e.g. *kneifen* ‘pinch’ and *zwicken* ‘pinch’).

6 As the third feature [+−objectification] refers to the case alternation in the external possessor, it receives a zero value in the internal possessor construction.
or have slightly different lexical meanings depending on the case of the possessor (e.g. \textit{streichen} ‘caress’ vs. ‘stroke’ and \textit{ziehen} ‘pull’ vs. ‘drag’; see Lee-Schoenfeld 2012). The body part PPs in our search strings, listed in Table 5, were chosen based on native-speaker intuition and our pilot search, with the goal of using the most frequently occurring combinations of PP + verb. The ellipsis symbol means that either a determiner or a possessive pronoun could be preceding the body part.

Table 5: Search strings

<table>
<thead>
<tr>
<th>Verb</th>
<th>Strings entered</th>
</tr>
</thead>
</table>
| \textit{beißen} ‘bite’ | \begin{itemize}
  \item in … Hand gebissen (‘in … hand bitten’)
  \item in … Nase gebissen (‘in … nose bitten’)
\end{itemize} |
| \textit{boxen} ‘box/punch’ | \begin{itemize}
  \item in … / ins Gesicht geboxt (‘in … / in-the face boxed/punched’)
\end{itemize} |
| \textit{hauen} ‘hit’ | \begin{itemize}
  \item in … Fresse gehauen (‘in … mouth hit’)
  \item in … / ins Gesicht gehauen (‘in … / in-the face hit’)
  \item auf … Kopf gehauen (‘on … head hit’)
  \item auf … Po gehauen (‘on … butt hit’)
\end{itemize} |
| \textit{schlagen} ‘hit’ | \begin{itemize}
  \item in … / ins Gesicht geschlagen (‘in … / in-the face hit’)
  \item auf … Hand geschlagen (‘on … hand hit’)
\end{itemize} |
| \textit{treten} ‘kick/step’ | \begin{itemize}
  \item in … Bauch getreten (‘in … belly kicked’)
  \item auf … Fuß getreten (‘on … foot stepped’)
  \item in … / ins Magen getreten (‘in … stomach kicked’)
  \item auf … Zehen getreten (‘on … toes stepped’)
\end{itemize} |

The corpus consulted for our first search, henceforth Corpus Search 1 (C1), was Cosmas II, Institut für Deutsche Sprache (IDS), Mannheim (https://cosmas2.ids-mannheim.de/somas2-web/menu.home.do), which consists of written modern German taken from a wide variety of German newspapers, the total number of word forms being 8,9 billion, approximately 22,2 million book pages.

The corpus consulted for our second search, henceforth Corpus Search 2 (C2), was Datenbank für Gesprochenes Deutsch (DGD) 2, Institut für Deutsche Sprache (IDS), Mannheim (https://dgd.ids-mannheim.de:8080/dgd/pragdb.dgd_extern.welcome), which is in the process of being built up and consists of spoken modern German of different genres and regional varieties.

7 The meaning of \textit{streichen} used with a directional PP-argument and dative-marked possessor is ‘stroke (as a directed motion, from point A to point B)’ as in \textit{Sie streichelte mir mit der Hand über den Kopf} (lit. ‘She stroked me with the hand across the head’), while the meaning of the same verb with a PP-adjunct and an accusative-marked possessor is ‘caress (without directed motion)’, as in \textit{Sie streichelte mich am Kopf} ‘She caressed me on the head’. The meaning of \textit{ziehen} used with a dative-marked possessor is ‘pull’, as in \textit{Er zog mir an den Haaren ‘He pulled on my hair}, but when used with an accusative-marked possessor, the meaning is more likely to be ‘drag’, as in \textit{Er zog mich an den Haaren durch das Zimmer ‘He pulled me by the hair across the room’}

8 We only entered the participle form of each verb for our written corpus search (C1, see below), while we worked with all verb forms (e.g. \textit{beiß-, biss-, gebissen} ‘bite, bit, bitten’) for the spoken one (C2, see below). In our spoken corpus search, we also allowed for free variation concerning body part and directional preposition. The reason is that, as mentioned as part of the interpretation of our search results, the written corpus we worked with is much larger than the spoken one.
the current total number of word forms being 7,367,432 (as of January 2014). As will be discussed later, the fact that the IDS spoken corpus, DGD2, is significantly smaller than the IDS written corpus, Cosmas II, is reflected in the relatively small number of hits in C2.

No hits were found for internal possessors (see (3): … hat in meine Hand gebissen ‘bit in my hand’) or doubly-marked possessors (see (4): … hat mir/mich in meine Hand gebissen ‘bit me.DAT/ACC in my hand’). The number of tokens for external possessors (see (1a-b) … hat mir/mich in die Hand gebissen ‘bit me.DAT/ACC in the hand’) are given in Tables 6 and 7.

Table 6: Results of C1 and C2 (external possession construction)

<table>
<thead>
<tr>
<th></th>
<th>Total # of Ext. Poss.</th>
<th>ACC</th>
<th>DAT</th>
<th>Unclear</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 (written)</td>
<td>100</td>
<td>32</td>
<td>67</td>
<td>1 item either ACC or DAT</td>
</tr>
<tr>
<td>C2 (spoken)</td>
<td>16</td>
<td>6</td>
<td>8</td>
<td>2 items either ACC or DAT</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>116</strong></td>
<td><strong>38</strong></td>
<td><strong>75</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Table 7: Case variation per verb

<table>
<thead>
<tr>
<th>Verb</th>
<th>C1: ACC</th>
<th>C1: DAT</th>
<th>C2: ACC</th>
<th>C2: DAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>beißen ‘bite’</td>
<td>11</td>
<td>15</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>boxen ‘box’</td>
<td>5</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>hauen ‘hit’</td>
<td>1</td>
<td>13</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>schlagen ‘hit’</td>
<td>5</td>
<td>10</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>treten ‘kick/step’</td>
<td>10</td>
<td>20</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Due to the unexpectedly small number of hits in C2 and the fact that we had no hits for internal and doubly-marked possessors in either C2 or C1, we conducted a third search via Google (C3), entering the search strings given in Table 5 with the exception of the string listed for the verb boxen ‘box/punch’. The results of this search are given in Table 8.
Table 8: Results of C3 (internal and doubly-marked possession constructions)\(^9,10\)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>beißen</td>
<td>154</td>
<td>40</td>
<td>19</td>
<td>16</td>
<td>5</td>
<td>(546)</td>
</tr>
<tr>
<td>‘bite’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hauen</td>
<td>122</td>
<td>77</td>
<td>11</td>
<td>57</td>
<td>9</td>
<td>(1041)</td>
</tr>
<tr>
<td>‘hit’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>schlagen</td>
<td>129</td>
<td>45</td>
<td>18</td>
<td>22</td>
<td>5</td>
<td>(409)</td>
</tr>
<tr>
<td>‘hit’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>treten</td>
<td>214</td>
<td>70</td>
<td>8</td>
<td>52</td>
<td>10</td>
<td>(884)</td>
</tr>
<tr>
<td>‘kick/step’</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>619</td>
<td>232</td>
<td>56</td>
<td>147</td>
<td>29</td>
<td>(2880)</td>
</tr>
</tbody>
</table>

3.3 Interpretation of Search Results

Although a comparison between our written and spoken corpus search results is difficult due to the surprisingly small number of hits our spoken corpus search yielded, and although neither the written nor the spoken corpus had any tokens of internal or doubly-marked possession, our corpus work as a whole does allow us to draw some valuable conclusions.

First, all three searches (C1, C2, and C3) confirm that dative-marked external possessors are indeed the most common choice in German inalienable possession constructions. The number of external possessor tokens (2880) is much higher than the number of internal possessor tokens (619) in C3, and within both external possession and doubly-marked possession, there are more dative-marked than accusative-marked possessors. In C1 and C2, of the total number of external possessors, 75 are dative-marked and only 38 are accusative-marked. Similarly, in C3, of the total number of doubly-marked possessors, 147 bear dative case and only 56 accusative case. This confirms the assumptions that dative marking, not accusative marking, of the external possessor is the default (see e.g. Wegener 1985). In our description this is accounted for by attributing the marked feature of [+objectification] to the accusative external possessor.

Second, the case variation between dative and accusative in the external possessor occurred in all three corpora, and – as far as a first interpretation can tell – it varies in a uniform way. In order to get at the motivation for the observed alternation, and to test our descriptive feature of objectification here, we ran a test including all tokens of C1 (which is the most

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9 Token numbers for external possession are listed in the rightmost column for comparison.
10 Some remarks on the general layout of the research in C3: We did not run statistical tests because (i) the constructions under investigation occurred too infrequently in the corpora we worked with and (ii) Google, while great for a pilot search, is simply not well-suited for a systematic, quantitatively analyzed corpus search for linguistic purposes. Some hits are on pages that are no longer accessible, others cannot be copied from the page they are found on, and again others are too extreme in content to include, etc. We therefore stick to an analysis that is more qualitative than quantitative.
homogeneous one of our corpora as it consists of written language only) and made the following distinction between formal and informal register. We considered the register to be formal when the source was a court or police report, written to be maximally neutral/unbiased. We also took use of subjunctive indicating reported speech and adverbials like allegedly (or other evidentiality markers) to be signs of formal register. On the other hand, we considered the register to be informal when the source was a narration written in the 1st person or a quotation providing a 1st person account of whatever event was being reported on. Given these definitions of formal and informal, we found what is summarized in Table 9.

Table 9: Use of dative vs. accusative-marked external possessors in formal vs. informal registers

<table>
<thead>
<tr>
<th></th>
<th>Total Ext. Possessors</th>
<th>DAT</th>
<th>ACC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Register</td>
<td>78</td>
<td>48</td>
<td>29</td>
</tr>
<tr>
<td>Informal Register</td>
<td>22</td>
<td>19</td>
<td>3</td>
</tr>
</tbody>
</table>

We were able to confirm the validity of our description of the respective constructions. Of the 100 total tokens for external possession constructions, a clear majority, 78%, appeared in the formal register and only 22% in the informal register, as expected given a written corpus consisting of news articles. Importantly, of the 32 tokens for accusative-marked possessors, almost all, 90.6%, were found in the formal register and only 9.4% in the informal register. In contrast, of the 67 tokens for dative-marked possessors, only 71.6% were in the formal register and thus a good amount, 28.4%, in the informal register. This means that, in the few instances of informal register, dative-marked possessors were clearly preferred, namely in 19 of 22 hits, that is, 86.3% of the time. This in turn means that, when there was a deviation from the prototypical strategy of encoding external possessors, i.e. when accusative was used instead of dative, namely 32.3% of the time, then it happened almost exclusively in the formal register.

Since the informal register correlates with subjectively told events characterized by the narrator or speaker wanting to convince the reader or listener by getting them to empathize, while the formal register correlates with writings that are meant to be completely neutral descriptions of the facts, we take our C1 findings in Table 9 to confirm the intuition that dative is used to draw attention to the situation of the possessor, whereas accusative is used when a neutral scene description is called for. In terms of Lehmann et al. (2004), a dative possessor is a non-core participant, a SYMPATHETICUS, whose involvement is emphasized because it is not dependent on the affected body part, the PATIENT, while an accusative possessor’s involvement does depend on the PATIENT because possessor and PATIENT are analogously affected. In short, our corpus search results are in line with Lehmann et al., suggesting that the choice between dative and accusative marking of the external possessor depends on the participant status of the possessor. The more involved in the core situation the possessor is, independently of the affected body part (from the perspective of the speaker), the more likely it will be expressed as a dative-marked nominal, emphasized in its role of SYMPATHETICUS. The more the possessor is identified
with the affected body part, the more likely it will be expressed as an accusative-marked nominal, playing the role of a (not necessarily empathy-invoking) PATIENT.

We are confident that these results can be generalized to other corpora, for example, corpora containing spoken language or language used in internet exchanges like our C2 and C3 corpora. The data in the appendix point in this direction. The external possessor construction with a dative-marked possessor is illustrated in appendix examples (A1-9), and the one with an accusative-marked possessor in appendix examples (A10-18). The latter ones show that the feature of [+objectification] is made use of to add neutrality (as compared to the default construction with a dative-marked possessor) in different communicative situations, i.e. with different pragmatic effects. For instance, accusative-marked possessors are found in reports on events in which the speaker/writer does not directly participate but acts as a witness (see (A10), (A13), (A16), and (A18)). Another typical constellation is found in more personal accounts where the speaker/writer is directly involved, but where they want to downplay the effect of the action on them (e.g. because a child or a pet did something unwelcome without bad intentions (see (A11), (A12), and (A14)). The same situation – mutatis mutandis – is found in the doubly-marked constructions (see the contrast between (A22-24) with dative possessors and (A25-27) with accusative possessors). However, these first results have to be confirmed by an extended study.

Third, the general prevalence of the dative case in the external possession construction, regardless of formality of register, can probably be explained by appealing to several factors coming into play in different ways. One factor is that the construction is well-established as the default construction in many European languages (see section 2 of Haspelmath 2001). Furthermore, as we discussed in section 2, the dative, representing the macro role of INDIRECTUS in German can encode a particularly broad domain of micro roles, which is reflected in the large variety of dative constructions, including “free datives”, i.e. datives not assigned to a core argument of the verb, in modern German (Zifonun et al. 1997). The participant roles of these datives span from EXPERIENCER to SYMPATHETICUS and often overlap (Wegener 1985). Whether inalienably possessed or not, and whether there is a possessum embedded in a PP or not, the “affectee” or “co-involved” animate participant in the situation described by the verb is dative-marked in German (for the exact syntactic and semantic conditions, see e.g. Primus 2012).11

Fourth, as for the frequency of the two marked (non-standard) constructions, internal and doubly-marked inalienable possession constructions, C3 confirms that, while these construction types are marked compared to external possession, they are in fact being used and are not rare in informal contexts like blogs. Their lack of occurrence in C2, our spoken corpus search, where we expected non-standard construction types to show up relatively frequently, can again be attributed to the small size of the corpus. Thus, overall, our study confirms that internal and doubly-marked inalienable possession constructions do need to be accounted for, and we have shown that Lehmann et al. (2004) provide the right kind of framework for such an account. The

11 “Affectee” is again used here in the sense of ‘entity taking part in the situation as an empathetic, necessarily animate co-participant’, as explained in section 1.
prediction that German makes available four different strategies (yielding five constructions) for encoding possessors, depending on the degree to which possession and participation are intended to be foregrounded or backgrounded, is borne out.

Fifth, as illustrated by the sample tokens for C3 given in the appendix (see (A19-21)), the internal possession strategy really does seem to be used in order to downplay the participation of the possessor and is thus a purposeful deviation from the default variant. It creates distance between narration and audience. No empathy with the possessor is intended, which is represented in our model by the feature [+defocusing]. Instead, if anything, extra attention is drawn to the agent (see (A20-21)). Another possible reason for the use of internal possession is that the involvement of the possessor was just mentioned, often via use of a dative pronoun in the immediately preceding clause or sentence (see (A19)).

Sixth, the function of the doubly-marked possession is the most restricted one, which correlates with its rare usage. As indicated by the feature [+expressive], it is used for exaggerated emphasis of everyone’s involvement in the situation, often in the context of children being addressed or the fictional situation of an animal speaking his or her mind (see the discussion of the data from our pilot study in section 3.1). As the material in the appendix shows, the doubly-marked possession construction, or more specifically, the feature [+expressive], can be put to further pragmatic usages. It can be used to highlight the climax in personal narratives of dramatic events (see (A23-24)), or it can be used in neutral reports on events that need to be maximally clear as to who did what and whose body part was involved (see (A25-27)). Unsurprisingly, it is the construction with an accusative-marked possessor (with the features [−defocusing], [+expressive], [+objectification]) that is particularly prone to be used for this purpose.

Summing up the less fine-grained variation between external (adverbal), internal (adnominal), and doubly-marked possession, it simply comes down to whether the speaker wants to emphasize the possessor’s core participant role of SYMPATHETICUS, his/her non-core interparticipant role of POSSESSOR, or both. Internal possession with a body-part possessum seems to be a coercion of inalienable possession into an alienable possession construction, which has the purpose of maximally downplaying the significance of the possessor’s role in the core situation expressed by the verb.

4 Conclusion

Supported by the results of extensive corpus work consisting of three separate searches, we have shown that the variation found in German inalienable possession constructions with a PP-embedded body part is not random but rather serves pragmatic purposes. We were able to distinguish and confirm the existence of five constructions for inalienable possession in German.

By combining the typologically informed conception of participation and participant roles of Lehmann et al. (2004) and the attribution of feature values (of the features defocusing, expressiveness, and objectification) to each of the five constructions, we proposed semantic and functional distinctions between the constructions that we proved to be valid in a test with corpus data.
Not wanting to repeat the results of the data analysis given in 3.3, we conclude by pointing to issues that need further study: the marked constructions need to be studied more thoroughly; the exact conditions and motives for variation between all constructions await further research, also taking into account factors like textual progression; the exact range of verbs participating in the dative/accusative alternation for the external possessor needs to be asserted; the influence of the category of person and the exact semantic and morphosyntactic structure of the possessor (first person versus non-first person, pronoun versus full NP or proper name, etc.) on the function of the construction has to be looked into; and a controlled larger corpus of suitable informal language data has to be used to deepen the results.

In our view, these are important desiderata for a better understanding of inalienable possession constructions in German, and a further study tackling these issues is underway.

5 References


McIntyre, Andrew. 2006. The Interpretation of German Datives and English have. In Abraham, Werner, Daniel Hole, and André Meinunger, eds., *Datives and Other Cases*, 185-211. Amsterdam: John Benjamins.


Appendix: Sample tokens from the three corpora C1, C2, and C3

The examples are ordered according to the five different constructions: (i) EPC\_DAT, (ii) EPC\_ACC, (iii) IPC, (iv) DMPC\_DAT, (v) DMPC\_ACC. For each construction there are examples with the verbs beiß\_en 'bite', schlag\_en 'hit' and treten 'kick, step'. The default constructions EPC\_DAT and EPC\_ACC are found in all three corpora C1, C2, and C3, and we give examples from all of them in order to demonstrate the homogeneity of the usage of the external possessor constructions in German. The marked constructions IPC, DMPC\_DAT and DMPC\_ACC were only found in C3. We give typical examples illustrating the particular textual functions of each marked construction as referred to in the text section.

(i) External possession construction with dative possessor: EPC\_DAT

Beiß\_en 'bite'

(A1) Er sei völlig perplex über die Aggression des jungen Mannes gewesen, "dass er dem Badegast nicht in die Nase gebissen hat, war alles", that he the\_DAT bath-guest not in the\_DAT nose bitten has was all wunderte er sich. Als er ihm einen Platzverweis ausgesprochen habe, sei eine richtige Hasstirade auf ihn losgegangen.  
C1 (RHZ04 Rhein-Zeitung 2004)  
‘He claimed to have been totally perplexed about the aggression of the young man, “it was a wonder that he did not bit the bath-guest in the nose”, he continued. When he had sent him off, a true torrent of hatred started against him, he said’.

(A2) Man kann den alten Biestern nicht trauen, ich hab das schon gehabt, das sie mir ins Bein gebissen haben.  
C2 (ZW--\_E_05741\_SE_01\_T_01; 20.09.13)  
‘You cannot trust these old beasts, I remember times when they bit me in the leg.’

(A3) Es gab heute schon einen kleinen Erfolg, als ich die beiden aus dem Käfig geholt habe und sie mit Hirse gefüttert hab. Ich habe erst dem Hahn die Hirse hingehalten, dann kam die Henne und wollte da auch ran, damit sie ihren Willen kriegt, hat sie mir in die Hand gebissen.  
‘There was some minor success today, when I took both out of the cage and fed them with sorghum. First, I offered the sorghum to the rooster, then the hen approached and wanted to get close, in order to get her way, it [the hen] bit me in the hand. It hurt quite a lot, but I got through it.’

Schlagen 'hit'

(A4) Erstmal\_s habe ich mit links das Los gezogen. Mein Sohn hatte mir vor der Abreise dreimal auf die Hand geschlagen",  
C1 (M99 Mannheimer Morgen 1999)  
‘For the first time, I drew the ticket with my left hand. My son had hit me on the hand three times before the departure”, Leipold reported.’

(A5) Und da hat mich ein Ästchen getroffen, das war nicht dicker wie ein Bleistift.  
C2 (ZW--\_E_01709\_SE_01\_T_01; 28.10.13)  
‘And then a twig that was no thicker than a pencil hit me. Hit me on the head.’

C3 (http://www.rund-ums-baby.de/forenarchiv/erziehung/Mama-hauen_11937.htm, accessed March 2014) ‘For about three weeks, my son (16 months) has had the habit of hitting me, whenever something does not suit him. I have tried all kinds of things: I have pretend-cried, I have hit him on the hand, I have scolded him – nothing is of any use.’

Treten ‘kick, step’


C1 (K00 Kleine Zeitung 2000) ‘Now, the twelve-year-old speaks. He and his friend will not get punished for the attack. They are too young – but they are very brutal. “The woman cried for help”, the boy tells, “I pulled on her purse, one of the others kicked her in the stomach.” The loot of 100 Schilling was shared among the three of them.’

(A8) Und dann sind sie ja dickfällig,

wenn die dir auf den Fuß treten,

when they you DAT on the foot step

die heben das Bein nicht wieder hoch, nicht. C2 (ZW--_E_04548_SE_01_T_01; 02.10.13) ‘And they are stubborn, you know, when they step on your foot, they won’t remove their leg again.’

(A9) Hi,

mein Großer hat mir beim Wickeln auch leider oft in den Bauch getreten.

my big-one has me DAT while changing too unfortunately often in the belly kicked

als ich mit Nr.2 ss war. Ist aber nix passiert, das Baby ist ja durchs Fruchtwasser geschützt.

C3 (http://www.rund-ums-baby.de/forenarchiv/schwanger-wer-noch/Meine-Tochter-2-Jahre-hat-mir-in-den-bauch-getreten_72607.htm, accessed March 2014) ‘Hi, I am sorry to say that, when I was pregnant with number 2, my oldest, too, often kicked me in the belly when I was changing him. Nothing happened, though, because babies are protected by the amniotic fluid.’

(ii) External possession construction with accusative possessor: EPC.Acc

Beißen ‘bite’

(A10) Ello berichtete später, Baader sei gewaltätig geworden, habe sie sogar einmal in die Nase gebissen.

have her ACC even once in the nose bitten

um zu verhindern, dass sie ihn verlässt. C1 (BRZ08 Braunschweiger Zeitung 2008) ‘Later Ello reported that Baader was violent, and that he even bit her in the nose once in order to keep her from leaving him.’

(A11) biss benni ihn vor wut in den po […]

bit benni him ACC with rage in the buttocks C2 (FOLK_E_00002_SE_01_T_01, 20.09.13) ‘Benni bit him with rage in the buttocks.’
Hallo
bin neu hier und muss gleich mein Problem los werden...

Mein kleiner Pascha (3 Monate alter Jack-Russell-Terrier) hat mich gestern in die Nase gebissen.
Zuerst haben wir wie immer total lieb miteinander gespielt, wobei er dabei auch manchmal recht wild wird [...], aber das ist doch normal bei so einem jungen Hund, oder?


‘Hello, am new here and have to share my problem right away…my little Pascha (3-month-old Jack Russell Terrier) bit me in the nose yesterday. First we played nicely as always, though he sometimes gets quite rough when we do that […], but that’s normal for such a young dog, isn’t it?’

Schlagen ‘hit’


C1 (NUN06 Nürnberger Nachrichten 2006)

‘This made sense, he said, because the eleven-year-old had sucked his thumb during class. But, allegedly, there were never been any beatings. The judge of the local court of Weißenburg believed the testimony of the student. The latter had declared that the teacher hit him on the hand with the stick.’

A14 Und einmal hat mich die vierjährige Tochter wie zum Spaß auf die Hand geschlagen

C2 (IS--_E_00135_SE_01_T_01; 24.09.13)

‘And once, the four-year-old daughter slapped me on the hand for the fun of it.’

A15 Abends auf der Couch sagt unser Sohn plötzlich, dass der Vater eines anderen Kindes ihn ins Gesicht geschlagen hat.

C3 (http://www.forum.jurathek.de/archive/index.php/t-7016.html?s=62baa77375b64a7f75f358f07a4ed95a, accessed March 2014)

‘In the evening, on the couch, our son suddenly said that the father of another child hit him in the face. First, we could not believe it (which adult does do such a thing), but he confirmed it several times, and showed us. Today in Kindergarten I met this father and asked him in front of the nanny, whether he touched my son’s face with his hand yesterday, he confirmed it.’

Treten ‘kick, step’


C1 (BRZ09 Braunschweiger Zeitung 2009)

‘After another kick against the bicycle, the 17-year-old beat him, he said, whereupon he hit back. He struck once more, he said, after the 17-year-old had kicked his girlfriend in the stomach.’
(A17) Ich will ihn nicht auf den Fuß treten!
I want him.ACC not on the foot step            C2 (ZW--E_03190_SE_01_T_01; 02.10.13)
‘I don’t want to step on his foot!’

(A18) Der Angeklagte: “Da bin ich sauer geworden und habe ihr eine geklatscht. Getreten habe ich sie aber
nicht.” Der Zeuge jedoch, der damals zufällig in der Nähe stand, berichtete:
“Er hat sie in den Bauch getreten.
he has her.ACC in the belly kicked
Sie ist zurückgetaumelt. Dann hat er ihr noch eine Ohrfeige verpasst. Sie ist zusammengeklappt. Man konnte
sehen, dass Schmerzen da waren.”

‘The accused: “Then I got mad and slapped her. I did not kick her, though.” The witness, however, who at
that time happened to be nearby, reported: “He kicked her in the belly. She fell back. Then, he gave her a slap
in the face on top of it. She collapsed. You could see that there was pain.”’

(iii) Internal possession construction: IPC (C3 only)

Beissen ‘bite’
(A19) Ich wollte mal meinen Otto mit ner weißen Futtermaus füttern. Naja, anscheinend hatte die Maus aber was
gewittert und ist mir plötzlich auf den Arm gesprungen, so schnell konnt ich gar net gucken.
Otto has only mouse smelled and the movement seen and simply just in my hand bitten
Aber er hat sofort wieder losgelassen, als er gemerkt hat, dass er mich hatte.

(http://www.nexusboard.net/sitemap/12937/beissen-t2282/, accessed January 2014)
‘One time, I wanted to feed my Otto with a white mouse for food. Well, it seems the mouse noticed
something and suddenly jumped on my arm, more quickly that I could look. Otto just smelled mouse and saw
the movement and simply bit into my hand. But he let go again at once when he realized he got me.’

Schlagen ‘hit’
(A20) Weil ihr Deutsch für ausführliche Erklärungen aber noch nicht gut genug ist, habe sie immer auf ihren Köln-
Pass gezeigt, den sie der Kontrolleurin aushändigen musste.
Als Reaktion habe die KVB-Mitarbeiterin mit dem Kontrollgerät auf ihre Hand geschlagen.
as reaction have the KVB-worker with the control-device on her hand hit
“Ich habe mich so schlecht gefühlt, hatte Schmerzen und habe nur noch geweint.” Sie habe sich ausgeliefert
und alleingelassen gefühlt.

‘Because her German is not yet good enough for detailed explanations, she said she kept pointing to her
Cologne card, which she had to hand over to the controller. As a reaction to that, the KVB-officer hit her
hand with the control device. “I felt so miserable, had pain and did nothing but cry.” She felt she was set-up
and left alone.’
Also... Die kleine Maus hat heute Nacht die ganze Zeit in meinen Magen getreten. 
well... the little mouse has today night the whole time in my stomach kicked
Inzwischen ist dieser natürlich ziemlich beleidigt und steinhart. 
I have already taken magnesium hoping the cramps would go away. But nothing is happening. What can be done about that?

Well… the peewee kicked in my stomach constantly tonight. Meanwhile, it [my stomach] is of course rather offended and rock-hard. I have already taken magnesium hoping the cramps would go away. But nothing is happening. What can be done about that?

Beissen ‘bite’

Aber: sie hat wohl ein Problem mit meinem Freund das ich (noch) nicht verstehe. 
It started when we lay on the couch one evening, and he tickled or rather teased me affectionately. I laughed, of course, and "defended" myself. 

Schlagen ‘hit’

Auf dem Weingut habe ich dann meine erste giftige Spinne gesehen, eine Redback-Spider. 
On the vineyard, I then saw my first poisonous spider, a redback spider.

Treten ‘kick, step’

Aua! Mein Pferd ist ein richtiges Trampeltier!

Ist mir dieses Riesenrindvieh heut mittag tatsächlich auf meine Zehen getreten.

Lori, unsere Chefin hat dann erschrocken aufgeschrien und mir auf meine Hand geschlagen!
Lori our boss has then in-shock screamed and hit me on my hand

Jetzt gehe ich das ganze etwas vorsichtiger an :)

‘Ouch! My horse is a true camel! That stupid horse actually stepped on my toes today, and, friendly, as he is, he only got my pinky toe. It still hurts like crazy. I had hoped that in the course of the day it would get better, but it still hurts like before. *Cry*! Can’t he walk around on someone else’s toes, why must it be mine?

Love, Nicole’

Beim Aufwachen aus der Narkose hat er diesen in seine Hand gebissen.

Dieser Tierarzt verklagte die Hundehalterin auf Schmerzensgeld sowie Schadensersatz im sechsstelligen Bereich, mit Erfolg. Ein umstrittenes Urteil, mit welchem wir als Hundehalter nicht gerechnet hätten.

‘A sentence of the high court Celle shows to what length this can go (and how important pet insurance is even for the most friendly dog). A German shepherd was in the care of a vet. When coming to from anesthesia, it bit him in his hand. The vet sued the dog owner for pain and suffering as well as damages for a six-figure sum, and he was successful. A controversial sentence, which we as dog owners would not have expected.’

Schlagen **(A26)** Im Bereich eines Kiosks trafen die Einsatzkräfte auf eine eingeschüchterte 21-jährige Essenerin. Diese bestätigte, dass sie durch eine männliche Person grundlos angegriffen wurde.

Der Mann habe sie dabei mit der Faust in ihr Gesicht geschlagen.

‘In the surroundings of the convenience store, the task force met a frightened 21-year-old woman from Essen. She confirmed that she had been attacked by a male person for no reason. During the attack, the man hit her in the face with his fist, she said. After that, federal police officers arrested a 30-year-old homeless person who had been held up by a railway officer.’

Treten **(A27)** Mehr oder weniger knapp 50 Sekunden vor Spielende, bei einem ein Punkt-Rückstand der DJK und Ballbesitz für Ludwigsstadt, bekam Raum, der seinen Körper nicht schnell genug zur Seite bekam und so etwas zu spät die Auslinie zu machte, wo TSV-Akteur Mohler vorbeiziehen wollte, ein witzloses unsportliches Foul von einem der beiden Schiedsrichter angehängt, mit der Begründung,

er hätte ihn auf seinen Fuß getreten.

‘More or less 50 seconds before the end of the game, the DJK trailing by one point and Ludwigsstadt having possession, a pointless unfair foul was called against Raum, who had not managed to move aside quickly enough and thus covered the sideline a little too late, where TSV-player Mohler wanted to pass him. The referee justified it by saying that he had stepped on his foot.’
Case and agreement in Cupeño: Morphology obscures a simple syntax

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1 Introduction

Cupeño is an extinct Uto-Aztecan language that was spoken by the Cupeño people in Southern California. It is part of the Takic group, and forms the Cupan subdivision together with Luiseño, Juaneño, and Cahuilla spoken in geographically neighboring regions. The data discussed in this paper are taken from Hill’s (2005) grammar, which contains data from her own fieldwork during 1962–1963 as well as field notes from previous work by Paul-Louis Faye, collected in the 1920s. The annotation H## denotes the page from which the example was taken.

Among the Uto-Aztecan languages, Cupeño is unique in that it has been described as displaying TAM-based split ergativity (Barragan 2003; Hill 2005). The language’s case and agreement morphology patterns correlate with tense: subject clitics and subject verbal agreement are in complementary distribution. The former is only realized in non-past tense, the latter only in past tense. Subject clitics display ergative-absolutive alignment and subject agreement displays a nominative-accusative alignment. In this paper, we argue that this distribution does not arise due to variation in syntactic structure (as has been suggested elsewhere for TAM-based ergativity splits); rather, the regular output of the syntactic derivation is subject to morphological constraints that obscure the syntax of the language. Clitic and agreement morphology are both sensitive to tense specification, giving the illusion of a syntactic deviation conditioned by tense. Contrary to previous analyses, we conclude that Cupeño does not exhibit split ergativity. Rather, it exhibits a uniform tripartite case system that is reflected in its person-number clitics and consistent nominative-accusative agreement.

The paper is organized as follows. In §2 we provide an overview of the Cupeño data, identifying aspects of it which will be accounted for under our analysis. In §3 we present the morphosyntactic notions of Case assignment and ϕ-agreement which form the basis for our proposal and argue that Cupeño exhibits a regular syntax across tense that is then acted upon by the morphological component. In §4 we provide a counterargument against approaches which treat the Cupeño facts as arising from alternations within the narrow syntax. In §5 we sketch an implementation of our analysis in the framework of Distributed Morphology and conclude in §6.

*We thank Adam Albright, Karlos Arregi, Jessica Coon, Line Mikkelsen, David Pesetsky, and the audience at BLS40 for discussion and comments.
2 Overview

The central generalization of Cupeño PN morphology is that subject marking differs between past and non-past predicates: in the past, a clitic appears in a Wackernagel clitic cluster (positioned second in the utterance) whereas in the non-past, an agreement morpheme appears affixed to the verb. In addition to the positional asymmetry, syntactic alignment also differs: the non-past subject-marking clitic is ergative-absolutive, while the past subject-marking affix is nominative. In all tenses, object agreement is realized as a proclitic on the verb. On the surface, this pattern is reminiscent of the phenomenon of split-ergativity. However, in subsequent sections, we argue that such a characterization is inappropriate for Cupeño.

(1) Subject and Object PN Morphology in Cupeño

<table>
<thead>
<tr>
<th>Verb</th>
<th>Non-past</th>
<th>Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>clitic in complex, Erg–Abs affix on verb, Nom(–Acc)</td>
<td></td>
</tr>
<tr>
<td>Object</td>
<td>proclitic on verb</td>
<td>proclitic on verb</td>
</tr>
</tbody>
</table>

The next three subsections detail the aspects of this past–nonpast asymmetry.

2.1 Non-Past Construction: Morphology in the Clitic Complex

Cupeño utilizes a clitic complex which appears in what is referred to as Wackernagel’s position, as the second item in the utterance. Given that the clitic complex can disrupt constituents as in (2b), we can be sure that it does not (uniformly) occupy a V2 position.

(2) a. $\text{axwe-sh}=\text{she}=\text{qwe}=\text{p}$
    $\text{odem-npn}=\text{dub}=\text{noni}=3\text{sg.erg}$
    $\text{isi-ly}=\text{e}$

    ‘That Coyote might give me something.’ (H19)

b. $\text{kanaasta}=\text{ku'ut}$
    $\text{yani-sh pem-yaw-neq}$
    $\text{basket}=\text{REP}$
    $\text{big-NPN}$
    $\text{3pl-carry-MOTC}$

    ‘They came bringing a big basket.’ (H71)

In non-past constructions, a subject clitic appears in the complex, and the realization of this clitic is dependent on person and number as well as transitivity of the predicate.

1Glosses: abs: absolutive case; acc: accusative; cf: contrastive focus; erg: ergative; irr: irrealis; motc: motion coming; nom: nominative; noni: non-instantiative; npn: non-possessed noun; obl: oblique case; r: realis rep: reportative; ss: same subject

2Items that appear in the clitic complex are broadly categorized into clitics which express evidentiality, modality, and PN agreement.
We observe syncretism in the 2pl and 3pl absolutive. Although the table above indicates distinctions between the other pairs of second and third person forms, the surface realizations of these forms do not make it clear that they are not syncretic at the point of vocabulary insertion. At the very least, there are examples where the third singular absolutive form triggers glottal stop epenthesis, and there are also cases where the third singular ergative form is realized (and glossed) as 'ep, hence identical in form to their analogues in the second person:

(4) a. me=she=’et qay hax ami’an pehiwqal pukuyka pekelawika
   and=DUB=3sg.abs not who close 3sg.be 3sg.to.fire 3sg.to.firewood
   heteyaxapi crouch-yaxa-subir
   ‘There must be nobody there to sit by his fire, by his firewood.’ (H425)

b. e=’ep haxiy qwa’ish pe-kwaani a’chiwi-qa
   2sg.pro=3sg.erg who food 3sg-for make-PRES
   ‘Who are you making that food for?’ (H366)

This is more of a data problem than an analytic one, however, as they all involve pairs of second- and third-person forms which always agree in number and alignment. The syncretism in the 2pl and 3pl absolutive forms are regular, and if we are to treat the remaining second person and third person forms as syncretic as well, the analysis would extend straightforwardly.

Subject marking in the non-past is conditioned by the transitivity of the predicate. Transitive and intransitive predicates are associated with distinct forms of subject marking in the clitic complex.

(5) a. em=el=pe tukumay peta’a-nim tanim
   2pl.pro=2pl.abs=IRR tomorrow all.pl dance
   ‘Tomorrow every one of you will dance.’ (H81)

b. tamika=’em=pe mi=yawichin me=’em=pe mi=wichaxin
   to.sun=2pl.erg=IRR 3pl.obj=take.in and=2pl.erg=IRR 3pl.obj=throw.in
   ‘You will take them to the east and you will throw them.’ (H81)

(6) a. na-nxalu’ve-i-im=el puy-we
   DUP-old.man-NPN-PL=3pl.abs dine-PRPL
   ‘The old men are eating.’ (H79)
Theodore Levin and Ryo Masuda

b. pem-sawi= me
3PL-bread=3PL.erg eat-PRPL
t ‘They are eating their bread.’ (H79)

The same subjects display distinct marking in the (a) and (b) examples. In the (a) examples the predicates are intransitive and in the (b) examples they are transitive.

The observation that subject marking is conditioned by transitivity is consistent with either an ergative-absolutive alignment or a tripartite alignment. In an ergative-absolutive alignment (7a), the marking associated with both the intransitive subject (A) and the direct object (O) is identical to the exclusion of marking associated with the transitive subject (S).

In a tripartite system (7b), all core arguments A, S, and O display unique marking.

(7) Morphosyntactic Alignment Patterns

a. S
   A O

b. S
   A O

In Cupeño, we observe that the object marking on the verb is not identical in form to the intransitive subject marking: if it were we would expect a morpheme with a /t/ to appear for 2sg objects (absolutive), but instead we observe the proclitic i=.

(8) ne’=ne i=tuvyung-qa mixanuk e-’ichaaywiqali
1SG.PRO=1SG.ERG 2SG.OBJ=ask-PRS how 2SG.do
‘I’m asking you how to do it.’ (H409)

Thus we can be certain that Cupeño actually exhibits tripartite alignment. The form of subject-marking in non-past tense correlates with the transitivity of the object as indicated by the table in (3). The form of object-marking is identical irrespective of transitivity or tense, but displays distinct forms conditioned by person and number as we will see in (9).

2.2 Object Proclitic on the Verb

As we have seen above, a proclitic, distinct in form from that seen on intransitive subject-marking, appears on transitive verbs which indicates the person and number of the object. The forms of this proclitic are given in the table below.

(9) Object Proclitic Forms (Hill 2005:113)

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ni=</td>
<td>chimi=</td>
</tr>
<tr>
<td>2</td>
<td>i=</td>
<td>imi=</td>
</tr>
<tr>
<td>3</td>
<td>pl=</td>
<td>mi=</td>
</tr>
</tbody>
</table>

In a nominative-accusative alignment, the transitive and intransitive subjects pattern together to the exclusion of the direct object (A=S≠O).
As with the ergative subject markers in the non-past, object proclitics have an /m/ in their plural forms. This may be the overt realization of plural marking.

As the examples below show, the object proclitics are not sensitive to tense in the way that the subject clitics are.

(10) a. qay mi-pa mi=tewiqtam
    not INDEF-time 3pl.obj=see.PL
    ‘[You (pl.)] will never see them again.’ (H111)
    b. mu=ku’ut aya pe-na’aqwanmi mi=kwaw-pe-n
       and=REP then 3SG-child.PL 3pl.obj=call-3SG-IN
       ‘And then it is said he called his children.’ (H113)

Hill observes that while most object clitics are obligatory, third person singular clitics display more variability in their realization. She contends that the presence of third, singular clitics is used for discourse-configurational purposes. Further investigation is necessary to determine if this functional analysis is correct. Alternatively, it may be that the presence or absence of object-marking is an instance of Differential Object Marking (DOM) conditioned by definiteness/specificity.

The proclitic reflects PN agreement for direct (10b), indirect (11a), and benefactive (11b) objects. We see in (11a) that in cases with both direct and indirect objects, the direct object is reflected on the proclitic.

(11) a. qay=’ep hish e-’achi chimi=’uni-qa
    not=2SG.ERG what 2SG-pet 1pl.obj-show-IN-PRS
    ‘You did not show us your pet.’ (H113)
    b. em-em=qwe=me chimi=mixáan me chimi=meqan-max
       2pl.pro-pl=can=2pl.erg 1pl.obj=do and 1pl.obj=kill-BENEFATIVE
       hunwet pe’ aya chimi=tul-qa
       bear DET now 1pl.obj=finish-PRES
       ‘You (pl.) must do something for us, and kill for our sake the bear who is now finishing us off.’ (H113)

For the remainder of this paper, we will only be concerned with direct object-marking.

2.3 Past Constructions: Subject Affixes on the Verb

In past tense contexts, subject marking fails to appear in the clitic complex. Instead, subjects are encoded as an affix on the verb.

(12) Subject Affix Forms in the Past Tense (Hill 2005:109)

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>ne</td>
<td>chem</td>
</tr>
<tr>
<td>2nd</td>
<td>e</td>
<td>em</td>
</tr>
<tr>
<td>3rd</td>
<td>pe</td>
<td>pem</td>
</tr>
</tbody>
</table>

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Verbs may be subdivided into three classes: zero, -in, and -yax, assigned based on what affix, if any, appears on the verbal root. Note that the classes are properties of “derived” verbs and not of roots – a given root may appear in two separate classes. The -in and -yax morphemes have some regularity in their semantics, which we will discuss below.

In terms of subject marking, the markers appear to the left of the verbal root for zero-class verbs and to its right (but to the left of the -in and -yax suffixes) in -in and -yax class verbs. Hence, Hill describes the verbal template of Cupeño for past tense verbs to be the following, where PNO denotes the PN object proclitic of the previous subsection, PNS∅ the PN subject marking for zero class verbs, and PNSi/y the PN subject marking for -in/-yax class verbs.

\[(13) \quad \text{PNO} = \text{PNS}_\varnothing - \text{Root} - \text{PNS}_{i/y} - \text{Theme} - \text{Derivational (-in/-yax)} - \text{Tense/Aspect}\]

Illustrative examples using the three verb classes are below.

(14)  
   a. ne-túl ‘I finished.’  
   b. chem-tewás ‘We lost.’

(15)  
   -in, -yax Class: Subject PN Suffixed  
   a. het-pe-yax  
      crouch-3sg.nom-yax  
      ‘He crouched.’  
   b. haw-che’-men  
      sing-1PL-in.pl  
      ‘We were singing.’

The variable position of subject agreement morphology in (14) and (15) appears prima facie to be problematic for the Mirror Principle (Baker 1985). We expect the features of the same node to be realized in the same position. If subject agreement resides in T0, as is commonly assumed since at least Chomsky (2000, 2001) we would expect it to appear outside all other verbal morphology.

Barragan suggests that the solution to this confound is syntax-internal. Specifically, he posits that -in and -yax are overt realizations of v0. Evidence for this position comes from Harley (2007), who shows that -in and -yax alternate with one another in a standard causative/inchoative pairing:

(16)  
   a. chashr-in  ‘to polish something’  
      chashr-yax  ‘something shines’  
   b. chaqw-in  ‘to flatten’  
      chaqe-yax  ‘to be oblique’  
   c. chene-in  ‘to roll something’  
      chene-yax  ‘something rolls’  
   d. chilyi-in  ‘jingle something’  
      chilyi-yax  ‘something jingles’  
   e. hiwe-in  ‘to heat to lukewarm’  
      hiwe-yax  ‘something is lukewarm’  
   f. puve-in  ‘to make round’  
      puve-yax  ‘something is spherical’
Given this alternation, Harley concludes -in is v\text{CAUSE} and -yax is v\text{BECOME}.

Analyzing -in and -yax as overt instantiations of v\text{0} allows Barragan to explain the varying position of subject agreement morphology. Specifically, he suggests that the verb undergoes Head Movement to AgrS\text{0} (T\text{0} in the current framework). Such movement is posited to occur because of an [affix] feature on AgrS\text{0}. However, the part of the verb that undergoes movement varies. In \emptyset-class verbs, v\text{0} lacks a verbal element, hence the verbal root is the only verbal element and must move from V\text{0} to AgrS\text{0}/T\text{0}. When v\text{0} is filled in -in and -yax class verbs, these elements, which are structurally closer than the verbal root, moves to AgrS\text{0}/T\text{0}, and the movement indicated by the dashed arrow in (17) does not occur.

\begin{equation}
(17) \text{Head Movement from V\text{0} and v\text{0} (Ex. 24-25 from Barragan (2003))}:
\end{equation}

On the assumption that Head Movement occurs within the narrow syntax (e.g., Travis (1984), Matushansky (2006), contra Chomsky (2000), Harley (2004)), post-syntactic morphological operations must still apply. In \emptyset-class verbs, subject agreement appears to the left of the verbal root, while in -in and -yax class verbs, subject agreement appears to the left of these affixes. This is unexpected if subject agreement is generated on the head of AgrSP or TP and these projections are head-final. Under these assumptions, we would expect subject agreement to appear to the right of the verbal element which raises to AgrS\text{0}/T\text{0}. Barragan overcomes this complication by employing Local Dislocation (Embick & Noyer 2001) prior to vocabulary insertion. Local Dislocation permits subject agreement morphology to relinearize to the left of only those elements which have undergone Head Movement to AgrS\text{0}/T\text{0}. As a result of this relinearization process, subject agreement morphology will be prefixal.

It should be noted that the specific analysis of the positioning of subject agreement is not crucial the current proposal. We are chiefly concerned with the form this subject-marking takes, not with its location. We turn to this concern now.

The subject affix in past tense, aside from positioning, differs from its non-past counterpart in its alignment property. There is a single series of affixes which marks subjects of both transitive and intransitive verbs. Hence they are not aligned as ergative-absolutive, but rather exhibit nominative behavior.

\begin{equation}
(18) \text{a. me aya ataxam mi=kwaw-pe'\text{-men-wen}}
\end{equation}

\begin{equation}
\text{and then person.PL 3PL.ACC=call-3pl.nom-IN.PL-PST.IMP.PL}
\end{equation}

\begin{equation}
\text{‘And then they called the people.’} \quad \text{(H112)}
\end{equation}
In summary, Cupeño PN morphology (in general) takes the following form.

\[(19)\]  
a. Subject PN morphology is realized distinctly in past and non-past tenses: in the former as verbal morphology, in the latter as a Wackernagel clitic.
b. Past tense subject PN morphology displays a nominative alignment, taking the same form regardless of transitivity.
c. Non-past tense subject PN morphology displays an ergative alignment. The form of the marker correlates with transitivity.
d. Object PN morphology, when present, is realized as a proclitic on the verb and is sensitive to neither tense nor transitivity.

The observation that subject PN morphology shifts from ergative to nominative as tense shifts from non-past to past has led some to conclude that Cupeño is a split-ergative language. In the next section, we offer an alternative proposal to this apparent alternation, arguing that Cupeño is better analyzed a case-agreement mismatch language where the case marking is uniformly tri-partite while verbal agreement is uniformly nominative. In this regard the language is like Nez Perce (Deal 2013) and Nepali (Bobaljik 2008). Unlike these languages, the overt realization of both case and agreement is conditioned by tense yielding the illusion of TAM-based split ergativity. In Section 4, we provide additional argumentation against a split-ergativity analysis.

3 Cupeño Displays a Regular Syntax

In this section, we provide an analysis of Cupeño’s regular syntactic processes. Again, we will contend that the language is uniformly tripartite in case and nominative in agreement. The apparent split-ergativity is epiphenomenal.

3.1 Case in Cupeño Clitics

As we have seen above, Cupeño shows a tripartite case alignment. Subjects of both unergative and unaccusative predicates license absolutive clitics. In transitive predicates, subject clitics are marked with ergative case. Furthermore, objects of transitive clauses do not license clitics with case-marking identical to intransitive subjects which would be expected in an ergative-absolutive alignment. Rather, object clitics bear a third, distinct case-marking (10) which we will label accusative.

We suggest that a tripartite system can be straightforwardly captured under a configurational system of case-assignment, whereby the case assigned to a nominal element, and thus reflected on the clitic generated with it, can be sensitive to the presence and/or absence of other local nominals. At this point, we find no strong motivating factors to push
us to adopt either a configurational or more commonly held Agree-based model for case-
assignment (Chomsky 2000, 2001) in Cupeño. Thus, the use of a configurational based
model is nothing more than a stylistic choice. However, there may yet be some stronger
motivation for favoring one over the other which we have not yet discovered.

3.1.1 Configurational Case Assignment

The configurational model assigns case to a noun-phrase based on the interplay of two factors:
the identity of the head that (c-)selects it and the position of the noun-phrase relative to
others in the clause (Yip et al. (1987); Marantz (1991); see also Bittner & Hale (1996)).
Procedurally, we follow Marantz’s (1991) disjunctive case hierarchy:

\[(20) \text{Disjunctive Case Hierarchy} \]
\[
\text{lexical/oblique case} \gg \text{dependent case} \gg \text{unmarked case}
\]

Let us now consider how (20) works. First, all noun-phrases that are selected by lexical
items which idiosyncratically specify a particular case-marking for their arguments (prepo-
sitions, verbs that govern so-called quirky case, etc.) are assigned the idiosyncratic case in
question.

Next, all those noun-phrases that did not receive case in the previous step are evaluated.
For every pair of as-of-yet caseless noun-phrases within a local domain that stand in an
asymmetric c-command relation, one will be assigned dependent case (in an ergative lan-
guage/construction, the higher of the two will get this case-marking, and we can informally
call it “ergative”; otherwise, the lower of the two will get this case-marking, and we can
informally call it “accusative”). This is schematized in (21).

\[(21) \text{Case Competition} \rightarrow \text{Dependent Case} \]
\[
\begin{align*}
\text{a.} & \quad \text{(nominative-accusative)} \\
\text{b.} & \quad \text{(ergative-absolutive)}
\end{align*}
\]

This stage of the algorithm is sometimes referred to as case-competition – the idea being
that dependent case is assigned to a noun-phrase by virtue of a competing as-of-yet caseless
noun-phrase. Note that case-competition cannot be a reciprocal relation, since that would
falsely predict that both of the competing arguments could be assigned dependent case;
instead, it must be unidirectional, with the direction parameterized as in (21).

In the final step, every noun-phrase that has been assigned lexical/oblique or dependent
case in the previous steps will be assigned unmarked case, which we can informally call
nominative or absolutive (or in the nominal domain, genitive). The term unmarked case
is not to be confused with default case or citation form: in English, for example, fragment

\[4\text{A problem faced by the Agree-model is that tripartite systems are sensitive to the presence/absence of another nominal as the case of a transitive subject is distinct from an intransitive subject. This is immediately reminiscent of a Dependent Case theory in which nominals act as case-competitors with one another. Nevertheless, a number of analyses of ergative case-marking have been advanced within the Agree model. See for instance Woolford (1997) and Legate (2008) a.o.}\]
answers and other free-standing forms bear accusative, the dependent case (Who came to the 
party? Him/*He). Instead, the term unmarked case refers to case-marking whose appearance 
is neither idiosyncratically conditioned nor dependent on the appearance of other noun-
phrases in the clause. What its name is meant to suggest is a cross-linguistic tendency to
be phonologically empty or phonologically lighter than dependent case and lexical/oblique
case.

3.1.2 Capturing a Tripartite System

As we can see from the description above, the configurational case-assignment algorithm in
its original formulation is not set up to handle a tripartite system, although it captures quite
straightforwardly the distribution of both ergative and absolutive case. Nevertheless, we
can directly extend the possible parameterizations of dependent case to capture a tripartite
system.

As we saw above, the only difference between an ergative system (21a) and an accusative
system (21b) is which of two nominals in an asymmetric c-command relation receives depen-
dent case. In the former, the c-commanding nominal received dependent case, while in the
latter it was the c-commanded nominal which received dependent case. We suggest that in
a tripartite system both nominals in an asymmetric c-command relationship (within a case-
assignment domain) can receive dependent case. The c-commanding nominal will receive
dependent ergative case and the c-commanded nominal will receive dependent accusative
case. Only when a single nominal exists in a case-assignment domain, regardless of its base-
position in Spec-vP (unergative) or Compl-V (unaccusative), will it receive unmarked case
which we can informally call absolutive. We can schematize this proposal for a tripartite
system as in (22).

(22) Tripartite Case Assignment
   a. NP”erg” . . . NP”acc”
   b. . . . NP”abs” . . .

The realization of two distinct forms of dependent case within a single language is not a
novel proposal. Baker & Vinokurova (2012) suggest that in Sakha dative case is dependent
case assigned to an indirect object which c-commands a direct object within the VP, and
accusative is assigned to direct objects which undergo object shift out of the VP to be c-
commanded by the subject within the CP-domain. Furthermore, Deal (2013) independently
notes that simultaneous assignment of both dependent cases can capture the behavior of
tripartite case in Nez Perce.

Having outlined the Marantzian theory of case assignment as specified for a tripartite
language in general, we can now address its implementation in Cupeño. As we have seen,
Cupeño does not realize case-marking on subject DPs themselves. Rather, it is the argument
clitics which host case specification. We suggest that clitics can be valued for case in the
same manner as nominals if clitics are generated with the same constituent as their nominal
host. An ingredient of the analysis is that of the big-DP shell as an added syntactic layer
within which clitics are hosted (Torrego 1992; Uriagereka 1995). Crucially for the aspect of
case assignment, the clitics are generated within the KP shell of the doubled argument.

We claim that the structure is as follows.
If case competition takes places within the narrow syntax as soon as possible (Baker & Vinokurova 2010; Preminger 2011b), then the entire KP will be valued for case. We posit that the morphological realization of case on subject nominals is on the clitics and that the associated DPs do not have distinct forms which correlate with case marking.\(^5\) If KPs are case competitors in Cupeño, then the subject clitic will be realized as dependent ergative only when there is a competing object KP which is (optionally) realized as dependent accusative. In intransitive predicates, there is only one KP in the derivation, which will be realized as unmarked absolutive.

We contend that case-assignment as described here occurs consistently across tenses: regardless of tense, transitive subject KPs are ergative, intransitive subject KPs are absolutive, and object KPs are accusative. Below, we suggest that the realization of this case-marking is limited to non-past tense because subject clitic hosting is sensitive to tense. First, we introduce our proposal for verbal agreement, which is also highly regular.

### 3.2 Agreement in Cupeño

As we have seen, the realization of subject agreement on the verb has two major constraints: (i) it only appears on past tense verbs, and (2) it appears in one of two different positions depending on verb class. We have adopted Barragan’s analysis of the latter point, positing that a combination of head-movement and Local Dislocation can account for the variable position of the subject agreement morphology within the verbal stem. In this section, we will lay the ground work for addressing the former point. Again, we will contend that subject agreement, though its overt realization correlates with tense, is not interrupted in non-past. Rather, agreement takes place, but is simply left covert.

It is commonly accepted that subject agreement morphology is the overt realization of ϕ-agreement between T\(^0\) and the subject (Chomsky 2000, 2001). Under this view, T\(^0\) bearing

\(^5\)Object DPs do bear case, as we see in example (46). This is predicted by our analysis, as any element generated in the KP – both the clitic and the host DP – can bear case.
unvalued $\varphi$-features probes the derivation, finding the subject which bears valued $\varphi$-features. After locating an appropriate host, the $\varphi$-features on $T^0$ are valued by those on the subject DP. Interestingly, at the same time, $T^0$’s case-feature values the unvalued case-feature of the subject. As mentioned above, this model is disadvantageous when considering languages like Cupéno which display non-uniform subject marking. If $T^0$ always enters an Agree relation with the subject, it is not (immediately) clear why the subject should bear variable case-marking. To avoid this problem entirely, we instead opted to utilize the Dependent Case model of case assignment. Having done so, one might wonder how $\varphi$-agreement is captured in this model: the most straightforward way to capture agreement is to make it sensitive to case (see Bobaljik (2008) and Preminger (2011a) for two related attempts). In many languages with non-nominative (or absolutive subjects) these elements do not control $\varphi$-agreement (see Bobaljik (2008) for more details). As such, he proposes that languages parameterize which case-marked nominals are accessible for agreement. In a language in which only nominative/absolutive arguments control $\varphi$-agreement, it is only those nominals which bear unmarked case that serve as a viable target for $\varphi$-feature valuation. In a language like Cupéno however, we have seen that affixal subject agreement marking is consistent regardless of the transitivity of the verb (18). Under the view espoused in the previous subsection, the transitive subject is underlingly ergative while the intransitive subject is underlingly absolutive. As such, both unmarked and dependent case appear capable of controlling agreement and a different parameterization is needed.

Crucially, we contend that $T^0$ always targets the structurally highest nominal, where “higher” is defined as a c-commanding relation. As such, the subject will control agreement regardless of case. This process is also insensitive to tense. Hence $\varphi$-agreement occurs in both past and non-past contexts. It is only the overt realization of this process that is limited to past tense.6

3.3 The Split-ergativity Illusion

So far we have suggested that case and agreement in Cupéno are regular. That is to say, the syntactic processes which control them within the narrow syntax always occur. Case-assignment occurs as outlined in section 3.1 and agreement occurs as outlined in 3.2. These processes yield a uniform tripartite case alignment and nominative agreement alignment. We

6Barragan also suggests that the feature [Past] conditions the appearance of subject agreement. Working within the AgrP framework of Chomsky (1995), Barragan assumes that subject agreement heads its own projection above TP. For him this is problematic, because he contends that AgrSP hosts $\varphi$-agreement while TP hosts tense specification. Such a structure is problematic for featurally conditioned allomorphy because the direction of conditioning is unexpected. Under such analyses (e.g., Bobaljik (2000)), it is commonly thought that features are erased as they are filled in with phonological information. If we take morphological operations to precede bottom-up, then the relevant feature ([Past] on $T^0$) will be erased before it can trigger allomorphy on AgrS0 above it. In this view, subject agreement should never show any sensitivity to feature-based allomorphy, due to its high structural position.

Barragan suggests a solution may be found in fusion. Specifically, if the adjacent nodes $T^0$ and AgrS0 fuse before vocabulary insertion, a complex head will be formed that includes featural information of both nodes. Vocabulary insertion crucially proceeds after this operation, filling in the complex head for all relevant features. Thus when the complex head contains PN features and a [Past] feature it will be filled with overt material. When the complex node lacks the [Past] feature it will be realized as null.
have offered specifics for implementing these alignments above, but note that they may be achieved by other means as well. In total, the PN morphology of Cupeño can be captured as below:

(24) Syntactic Architecture in Cupeño: Dependent Case Assignment and $\phi$-agreement

![Diagram of Syntactic Architecture in Cupeño]

When the subject KP enters the derivation case competition immediately occurs. If the predicate is transitive, as diagrammed above, and an object KP is present (either overtly or not), the subject will receive dependent ergative case and the object will receive dependent accusative. If only one argument is present in the clause, it will receive unmarked absolutive case. When $T^0$ enters the derivation, it will probe its c-command domain for an accessible nominal with valued phi-features. $T^0$ will always target the subject KP as it is the closest accessible goal, yielding uniform nominative agreement. The exact position within the verbal stem is conditioned by the presence or absence of $v^0$ elements.

What remains to be captured is how the apparent split-ergativity arises. What limits the overt realization of case to non-past tense clauses and $\phi$-agreement to past tense clauses? We contend that both clitic hosting and subject agreement morphology are sensitive to tense. Clitics cannot be hosted in past tense, thus they disappear. Similarly, subject agreement is realized as null in non-past tense. These two coincidental operations yield apparent split-ergativity. In this subsection, we provide motivation for these claims.

3.3.1 Clitics are Sensitive to Tense

We contend that ergative-absolutive subject clitics are only realized in non-past tense, because clitic hosting is sensitive to tense. We have suggested, above, that clitics in Cupeno are generated along with their host DPs within a KP. We assume that the generation of the
KP occurs in all tenses. Nevertheless, while clitics are uniformly generated, they may not always find a viable host. When no host is available, the clitic is not pronounced. Arregi & Nevins (2012), following van Craenenbrock and von Koppen (2008), take a similar approach to clitic hosting in Basque, noting that clitics are sensitive to featural specification. Namely, clitics in Basque are not realized in non-finite clauses:

\[(25)\] a. \((\text{su-k})\) (neu) ikus-i \(n=a=su\)  
\((2\text{SG-ERG})\) (me.ABS) see-PRF  
\(1\text{sg.abs}=1\text{sg.pres}=2\text{sg.erg}\)  
'You have seen me.'  
[Arregi & Nevins 2012]  
b. \([\text{su-k} \text{ neu} \text{ ikus-ti}]\) nai d-au  
\(2\text{sg.ERG} \text{ me.ABS see}=\text{NF want} 1\text{-3sg.pres}\)  
'He wants you to see me.'

Note that in (25b), no clitic complex is realized in the embedded, non-finite clause. Such observations have their origin in Kayne (1975) and subsequent work on Romance. What is distinct about Cupéno is that the relevant featural specification is not finiteness, but tense. One might wonder why \(C^0\) should bear information regarding tense, thought to be hosted in \(T^0\). There are a number of technical implementations which could ensure that \(C^0\) is sensitive to tense. We might imagine that \(C^0\) enters an Agree relationship with \(T^0\) (e.g., Pesetsky & Torrego (2001)). Alternatively, \(C^0\) and \(T^0\) may share identical features as suggested by Ouali (2008). Additionally, it can be shown empirically that \(C^0\) is sensitive to tense. It has been observed in Irish that the form of the complementizer is sensitive to the tense of the embedded clause.

\[(26)\] a. an fear a labhrann tu leis  
the man \(\text{crel.npst speak.PRS}\) you with.him  
'The man that you speak to'  
[Chung & McCloskey 1987]  
b. an fear ar labhair tu leis  
the man \(\text{crel.pst speak.PST}\) you with.him  
'The man that you spoke to'

For these reasons, we take \(C\) to be the host of the subject clitic. Diverging from Basque Arregi & Nevins (2012:57), both ergative and absolutive clitics are hosted by \(C\). The proposed clitic hosts in Cupéno are summarized below.

\[(27)\] Clitic Hosts in Cupéno
a. Non-[Past] \(C\) hosts ergative and absolutive clitics.  
b. \(V\) hosts accusative clitics.

Crucially, as \(V^0\) is never specified for tense, we expect object clitics to be hosted regardless of tense. This expectation is borne out, as seen in (10).

### 3.3.2 Agreement is Sensitive to Tense

Like clitic hosting, we contend that agreement may also be sensitive to tense. Specifically, though the process of Agree takes place between \(T^0\) and the subject regardless of tense, only
in past tense is the result of this operation realized overtly. It is well-known that agreement may be sensitive to tense. English, for instance, displays (impoverished) $\varphi$-agreement in present tense, but uniform agreement in past tense.

(28) English Verbal Agreement and Tense
   a. Non-past Tense: 1SG, 1PL, 2SG, 2PL, 3PL: walk; 3SG: walks
   b. Past Tense: walked

It is conceivable that Cupeño displays a similar pattern. Namely, in past tense, subject agreement is articulated based on the $\varphi$-features (and case) of the subject while in present tense, agreement is uniformly null.

If these two plausible conditions on the realization of clitics and agreement are simultaneously operative, the illusion of split-ergativity is achieved. In non-past tense, the ergative-absolutive subject clitic will be hosted on $C^0$[-past], while subject agreement will be realized as null. In past tense, clitics will not be hosted, and nominative subject agreement will be spelled out overtly. In the next section, we entertain alternative analyses that have been suggested for TAM-based split ergativity, noting that these alternatives seem ill-suited for the Cupeño data.

4 Against a Structural Split-ergative Analysis

As discussed, the core empirical fact of Cupeño is the following morphosyntactic “split”:

(29) a. Non-past tense subjects display ergative-absolutive alignment.
    b. Past tense subjects display nominative-accusative alignment.

In the previous section, we accounted for this phenomenon by incorporating existing theories of Case and agreement and arguing that Cupeño is a tripartite language. One immediate challenge to our proposal is that it relies on a morphological coincidence, namely that the two independent subject-markers (as clitic and as affix) are both sensitive to tense, and the realization of one of them is null exactly when the other is not. A counter-proposal may attempt to re-establish the role of the syntax in contributing to the split in Cupeño, analogous to analyses of aspect-based split-ergative languages.

In this section, we outline conceptual and empirical issues that arise with a syntactic treatment of the phenomenon as tense-based split-ergativity, and argue that the proposal would be untenable without appeal to the morphological component.

4.1 Empirical Problems

The Cupeño data are at odds with cross-linguistic tendencies of split-ergative systems. Consider the following generalization from Dixon’s (1994) seminal work on ergativity:

(30) Ergative Split Generalization (Dixon 1994)
    If a split is conditioned by tense or aspect, the ergative marking is either found in
    the past tense or the imperfective aspect.
If Cupeño was a split-ergative system, it would be a counter-example to this generalization as ergative alignment (i.e., transitivity-sensitive subject-marking) is exhibited in the non-past tense and not in the past tense. Similarly, in line with Dixon’s generalization, splits correlate with the non-perfective aspect in widely unrelated languages.

(31) a. emakume-a-k ogi-ak ja-n d-it-u
woman-DET-erg bread-DET.PL eat-PERF 3.ABS-PL-have.3.ERG
‘The woman has eaten the breads.’ [Basque, Laka 2006]
b. emakume-a-∅ ogi-ak ja-te-n ari da
woman-DET-abs bread-DET.PL eat-NML-LOC PROG 3.ABS.is
‘The woman is eating (the) bread.’

(32) a. Raam-ne roTii khaayhii thi
Raam-erg bread.FEM eat.PERF.FEM was.FEM
‘Ram had eaten bread.’ [Hindi, Mahajan 1990]
b. Raam-∅ roTii khaataa thawa
Ram-nom bread.FEM eat.IMPF.MASC was.MASC
‘Ram (habitually) ate bread.’

Moreover, recent research has suggested that all TAM split-ergative systems might be reduced to aspect splits (Salanova 2007; Coon 2010). As we see in the examples below, Cupeño does not show such alternations between perfect and imperfect constructions.

(33) a. e’e=qwe=p mix-anuk pex-anuk ne’e-y
2SG.PRO=NONI=2SG.erg INDEF.do-ss DEF.do-ss 1SG.PRO-OBJ
ni=kwel-i
1SG.ACC=get.us-IN
‘You can cure me somehow.’
b. ne-ye ’apu=sre=’ep tew-qa’ ne’ach-i
1SG-mother already=DUB=2SG.erg see-IMP.SG 1SG-pet-OBJ
‘Mother, did you perhaps just now see my pet?’

(34) a. yut-ne-n
raise-1SG.nom-IN
‘I raised.’
wichax-ne-n-qal
throw-1SG.nom-IN-IMP.PST.SG
‘I was throwing (it).’

In (33)-(34), the presence or absence of non-perfective morphology has no consequence for subject-marking. In non-past tense, the subject-marking is uniformly ergative-absolutive. In past tense, it is uniformly nominative. Of course, generalizations are made to be broken – we must entertain the possibility that Cupeño poses a true counter-example to these claims.
4.2 Conceptual Problems

Coon (2010) has advanced the following claim that aspect-based split-ergativity is conditioned by biclausality: a transitive predicate can be decomposed into two intransitive predicates.

(35) Split Proposal (Coon 2010)
In nonperfective aspects which show ‘split ergativity,’ ergative Case is absent in transitive clauses because the subject is assigned Case not by the lexical verb, but by an intransitive aspectual verb.

As empirical evidence, Coon discusses examples from Chol (Mayan), where clauses embedded under aspect (36) look identical to those embedded under canonical embedding predicates (37).

(36) Embedding Under Progressive
   a. choŋkol [k-wuits’ jiñi pisil]
      PROG 1.ABS-wash DET clothes
      ‘I am washing the clothes.’
   b. choŋkol [k-majl-el]
      PROG 1.ABS-go-NML
      ‘I am going.’
   c. choŋkol [k-mejk’el]
      PROG 1.ABS-hug-PASV-NML
      ‘I am being hugged.’

(37) Embedding Under ‘want’
   a. k-om [k-wuts’ jiñi pisil]
      1.ABS-want 1.ABS-wash DET clothes
      ‘I want to wash the clothes.’
   b. k-om [k-majl-el]
      1.ABS-want 1.ABS-go-NML
      ‘I want to go.’
   c. k-om [k-mejk’el]
      1.ABS-want 1.ABS-hug-PASV-NML
      ‘I want to be hugged.’

In other words, transitive predicates are decomposed into two intransitive predicates, with non-perfective aspect adding structure. The contrast is represented schematically in (38). In the ergative alignment, no additional structure is present and as such syntactic operations, like Dependent Case assignment, are not interrupted. In the split-alignment, the presence of additional structure (indicated by the boundary line), triggered by non-perfect morphology in TAM-based splits, and Participant Phrases in person-based splits serves to interrupt such
processes making dependent ergative case realization impossible, because the relevant case competitors no longer occupy the same local domain (Coon & Preminger 2012).  

(38) Ergative vs. Split Alignment (Coon & Preminger 2012)

Hence, if split-ergativity implies biclausality, we might expect to find evidence of subordinated biclausality in the Cupeño past tense. However, such clauses display none of the characteristics that are associated with subordination. To see this, we note three ways in which Cupeño expresses subordination. First, adverbial subordination is signaled by switch reference marking.

(39) a. mu=ku’ut pi=’am-i-nuk, pi=pe-meq 
   and=REP 3SO=knock.down-in-ss 3SO=3s-kill
   ‘And it is said that having knocked him down, he killed him.’

   b. pe-ting-qali=ku’ut pe-nene-wen
   3s-be.hot-ds=REP 3s-go.around-PIST
   ‘He used to walk around when it was hot.’

Secondly, sentential complements and relative clauses bear mood marking on the predicate.

(40) a. me=qwe=me aya mixa-nuk hiwchu-wene ne’ash
   and=NONI=3PL.ERG now be-ss know-CUSTPL 1s-pet
   pe-hiw-qali-ve
   3s-be.there-PISI-subr
   ‘So how do they know my pet is alive.’

   b. mu=ku’ut pem-yax pe-meqa-pi
   AND=REP 3PL-say 3s-kill-subi
   ‘And it is said they said for him to kill it.’

Finally, deverbal morphology is realized through suffixes such as -sh which are used for non-possessed nouns.

(41) a. ne-nee’e=m tewahi-sh
   1s-basket-MIR lose-npn
   ‘My basket is lost.’

---

7Coon & Preminger (2012) suggest that additional structure could similarly interrupt Agree-based case assignment.
The three strategies employed above are not attested to represent the past tense, and the biclausality associated with split-ergativity is not maintained in Cupeño.

(42) a. tekwaye=she kwini-ly-i pem-chi
    long.ago=DUB acorn-NPN-O 3PL-gather
    ‘Long ago they must have gathered acorns.’

b. tuku=`ep ne-a’alxi, qay ne-tul
    yesterday=R 1SG-recite.history not 1SG-finish
    ‘Yesterday, I told history. I did not finish.’

c. Oceanside-nga’aw=`ep ne-nene-wen tuku
    Oceanside-at=R 1S-go.around-PIST yesterday
    ‘I was in Oceanside yesterday.’

One final point to be made is that in general, T is located above the base position of the subject – see McCloskey (1997) for a review. Thus, if case-assignment occurs as soon as possible (Baker & Vinokurova (2010)), then case will be determined before $T^0$ enters the derivation. Namely, case competition will take place when the subject enters the derivation in Spec-vP. As such, it would be impossible for $T^0$, which carries tense specification, to interrupt the case assignment process, yielding a syntactic ergativity split.

In summary, Cupeño patterns differently from other languages that have been classified as split-ergative. While it is possible that generalizations over such languages are incorrect, diagnostics for complex structure arising from split-ergativity also fail in Cupeño, and it appears that the analysis which appeals to morphological operation is the most parsimonious.

5 Further Remarks on the Derivation Under DM

We conclude our discussion of Cupeño PN morphology by making more explicit the Distributed Morphology operations which we have appealed to thus far.

5.1 Unification of PN Morphemes

We reproduce here from §1 the forms of the affixes and clitics.

(43) Past Subject PN Affixes & Object Proclitics on the Verb (Hill 2005:109, 113)

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ni=</td>
<td>chimi=</td>
</tr>
<tr>
<td>2</td>
<td>i=</td>
<td>imi=</td>
</tr>
<tr>
<td>3</td>
<td>pi=</td>
<td>mi=</td>
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<th></th>
<th>Singular</th>
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<td>chem</td>
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<td>2</td>
<td>e</td>
<td>em</td>
</tr>
<tr>
<td>3</td>
<td>pe</td>
<td>pem</td>
</tr>
</tbody>
</table>
It is immediately obvious that the absolutive series of subject clitics is the “odd man out” among PN morphology. This is made even more striking when comparing the morphemes to pronouns:

\[(45)\] Pronouns

<table>
<thead>
<tr>
<th></th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ne’</td>
<td>che-m</td>
</tr>
<tr>
<td>2</td>
<td>e’</td>
<td>e-m</td>
</tr>
<tr>
<td>3</td>
<td>pe’</td>
<td>pe-m</td>
</tr>
</tbody>
</table>

Moreover, the difference between the object proclitic and the subject affix can be accounted for in part by noting that \(-i\) appears on full object nominals to denote its status as an object:

\[(46)\] mu=ku’ut pe-nenmin axwech-\(i\) kawisich-\(i\) and=\(\text{REP}\) 3SG.OBJ-chase dem-\text{obj} fox-\text{obj}

‘And it is said he chased that fox.’

This asymmetry between the absolutive series and the rest of the PN markers is not surprising, given that Cupeno is unique among the Uto-Aztecan languages for exhibiting ergative-absolutive alignment. Thus, we take the absolutive series to be the innovative form and, aside from the syncretism operation of the following subsection, will treat its vocabulary items as distinct from the others.⁸

### 5.2 Second and Third Person Syncretism

There is syncretism in the non-past subject clitics.⁹ This is accounted for via an Impoverishment rule that removes the distinction between second and third person forms in the 2nd and 3rd person. We take, as discussed above, these subject clitics to be hosted by \(C\).

\[(47)\] 2nd/3rd Person Number Impoverishment

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⁸This isn’t to say that the absolutive series lacks regularity or are completely detached from the other PN morphology. Not only does it exhibit syncretism together with the ergative series, they are phonologically regular in having a coronal segment and near-agreement in manner to their ergative series counterparts.

⁹We assume here that there is indeed regular syncretism across the paradigm despite some phonological differences. As we discussed in §1, restricting ourselves to the \(=el\) (2/3pl absolutive) case is a minor change.
Case and agreement in Cupeño

a. Structural description: a clitic Cl hosted by C specified as [+Participant]
b. Structural change: Cl → [-Participant]

(48) Vocabulary Insertion for Non-past Subject Clitics, Absolutive Series
et ↔ [C, +Absolutive, +Singular]
el ↔ [C, +Absolutive, -Singular]

Note that by impoverishing the marked form of the Participant feature, we correctly derive the pattern that the syncretism is 3-to-2. We see across the paradigms that the labials /p/-/m/ are indicative of 3rd person. Hence the impoverished second person matches the feature specification of the third person, and they together contrast with the first person, which is still specified [+Author]. We must leave the featural specification and exponence of the exclusive and inclusive first person plurals as unanalyzed.

5.3 Plural Fission

Cupeño appears to exhibit a specific exponent for plurality, namely -m-, which is observed clearly in the past subject affixes and the object proclitics. There are phonological complications to the data. Third person object proclitics alternate between pi- and =mi – suggestive of an OCP place effect, though we do have pem- as the 3pl subject affix. A similar effect is observed for the second and third person non-past subject clitics in the ergative series. This leaves us with the striking generalization that the absolutive non-past subject clitics are the only context where there appears to be no plausible instances of plurality marked by /m/. Again, we are led to conclude that the non-absolutive PN markers pattern together, and they have -m- as an exponent for plurality.

Recall the definition of Morphological Fission, from Arregi & Nevins (2012:132): it requires a category C, and it repairs a restriction on the realization of two features F_1 and F_2 on the same terminal node. Thus we are led to posit two separate fission rules, one for PN affixes, and another for PN clitics. We interpret plural exponence as a restriction on realizing person and [-singular] on the same terminal node.

(49) Affixal/Clitic Plural Fission: T/D, [Author], [-singular]
(50) Vocabulary Entry for Plural PN Morphemes: m ↔ [-singular]

5.4 Person Morphology

After factoring out plural -m-, we are left with regular correspondences in person: first person /n/, first person plural /ch/, second person /∅/, and third person /p/.

We posit vocabulary entries for person, which are superceded in the absolutive series by entries which are specified for +Absolutive. Further, we propose a context-sensitive rule for the first-person plural form /ch/.

(51) n ↔ [+Author]
ch ↔ [+Author] /_- [-singular]
∅ ↔ [-Author, +Participant]
p ↔ [-Author, -Participant]
This accounts for the ergative series of subject clitics as well: both second and third person clitics are specified as [-Author, -Participant] by Person Impoverishment, and hence the singular 2/3 marker is $p$, and the plural is $p$-$m$, which surfaces as $m$.

### 5.5 T-conditioned Allomorphy

Given the morphological fission rule established in the previous subsection, we may write vocabulary entries for the PN morphology. In the past, subject agreement is overt on T and person and number are realized separately.

The following structure is for the first person subject agreement in the past, after Plural Fission as applied. The terminal labeled $T_1$ is realized with first person plural /ch/, and $T_2$ is realized with plural /e/. Note that there is no competition in $T_2$ involving person morphemes, as no vocabulary entry corresponds to a valued [Participant] feature without a valued [Author] feature.

(52) First Person Subject Agreement

\[
\begin{array}{c}
\text{T} \\
\text{T}_1 \\
\quad \text{[} +\text{Past} , +\text{Author} , +\text{Part} \text{]} \\
\end{array} \quad \begin{array}{c}
\text{T}_2 \\
\quad \text{[} +\text{Past} , -\text{Singular} , +\text{Part} \text{]} \\
\end{array}
\]

This analysis is incomplete in that it does not account for the realization of a vowel /e/ for subjects and /i/ for objects.

In the non-past, PN affixation on T is null. We take this to mean that the T terminal node is obliterated. Although we do not have a full analysis for the /e/ and /i/ vowels on the PN morphemes, we cite this as further evidence that T is being obliterated: the systematic absence of subject affixes on the verb in the non-past context is contrasted with the presence of a null second person morpheme + a vowel e that realizes the 2sG subject in the past.

(53) Non-Past T Obliteration Rule

a. Structural description: A T terminal with [-Past]

b. Structural change: Delete T.

Let us look back at the proposed structure in (52). Even if Plural Fission were to occur before the obliteration operation, both T nodes would still bear the feature [-Past] and hence would be subject to T obliteration, and we correctly predict that no stray plural /-m/ will appear in the past.

In contrast to the subject agreement affix on the verb, the sensitivity to [Past] for the subject clitic in the clitic complex is purely syntactic: the absence of a syntactic host in the

---

10 An alternative, though more problematic, analysis is as follows: There is no phonological constraint like the OCP which bans the $p$-$m$ sequence, as evidenced by forms like 3pl subject *pem*-.$m$. Instead, there is a number-conditioned split: the singular forms syncretize to the 3rd person /p/ morpheme, while the plural forms syncretize to the 2nd person /∅/.
past means there are no past subject clitics. Hence we only need vocabulary entries for the non-past subject clitics. This proceeds straightforwardly with the proviso that exceptional vocabulary entries are available for the absolutive-marked clitics.

Finally, the object clitics are derived in the same manner as the subject agreement affixes, with minor differences: (i) the vocabulary items are inserted on D terminals, not T terminals – not problematic as T nodes bear ϕ-features like D nodes through Agree; (ii) there is no obliteration of nodes due to [Past], so object clitics are overt in all tenses.

6 Conclusion

We have argued for an analysis of person-number morphology in Cupeño that proceeded as follows: subject and object clitics are assigned (dependent) case together with their source DP, and ϕ-feature agreement at T⁰ targets the subject DP. These syntactic operations occur regularly independent of tense. Tense-sensitive effects arise solely in the morphological component: clitics are not hosted by C⁰[+past] and PN affixation is realized as ∅ when T⁰ is [-past]. It is these two factors alternating with overt realizations that conspire to create an illusion of a tense-conditioned ergative split.

The simpler alternative is one that posits a structural difference sensitive to tense. We argued that a version of this approach that mirrors the aspect split analysis (cf. Coon (2010)) is untenable on empirical and conceptual grounds. Finally, we sketched a model of Cupeño PN morphology under the framework of Distributed Morphology.

We find the Cupeño data to be an illustrative example of how regular syntactic processes can be obscured by morphological conditions - Agree Link and Agree Copy, respectively, under the model of Distributed Morphology as argued for by Arregi & Nevins (2012).

References


1 Introduction

The study of clitics has been a fertile site for investigating matters of the syntax-phonology interface, arguably second only to phonological phrasing phenomena. For instance, a classical puzzle has been the analysis of Wackernagel clitics, which appear in a second ‘position’ in the clause, either following the first syntactic phrase or first stressed word (Wackernagel 1892). Recent work have converged on an integrated model, whereby the implementation of clitic placement is distributed across both the syntactic and post-syntactic (PF) components of the grammar (Bošković 2001; Mavrogiorgos 2013; Spencer & Luís 2012). Bošković’s (2001) manuscript presents an overview of the field at the time, ranging from strongly syntactic approaches to strongly phonological approaches, and based on data from cases such as Serbo-Croatian clitics, argues against these unilateral analyses. A natural question that follows from this conclusion is to what extent these two components may be divorced: if syntactic operations such as movement and PF mechanisms such as phonological filters are independent, then we may expect instances where the syntax is relatively inert while the PF component remains active.

Ingush and Chechen, two Northeast Caucasian languages, demonstrate a rare interaction between cliticization and word-level reduplication. In these languages, a clitic ‘a appears homophonously in a number of contexts, among them as a clause chaining marker. The conventional definition for a chained clause is a coordinated clause which shares the subject with the other conjunct. The languages exhibit OV word order and the verb phrase may also include preverbal elements (such as light verb constructions) and deictic markers. In chained clauses with transitive verbs (1) or other qualifying preverbal elements (2–3), the clitic ‘a is hosted by the immediately preverbal item. Data come from Good (2005) and Nichols (2011).

(1) Ahwmad, zhwala ‘a iacna, vilxira
    Ahmed dog & buy.CVNT cry.WP
    ‘Ahmed bought a dog and cried.’ / ‘Ahmed, having bought a dog, cried.’

(2) Complex verb constructions
    a. Ahwmada, kixat jaaz ‘a dina, zheina dueshu
       Ahmed.ERG letter write & do.CVNT book read.PRES
       ‘Ahmed, having written a letter, reads a book.’
In an intransitive simplex verb, which lacks an appropriate preverbal host, the infinitival form of the verb appears to the left of ‘a (and the finite verb) to host the clitic:

(4) Ahwmad, wa=’a wiina, dwa-vagh-ara.
    Ahmed stay.inf=& stay.acv deix-go-past
    ‘Ahmed stayed (for a while) and left.’ [Chechen]

We henceforth refer to this case of word-level reduplication as *verb doubling*. The particle ‘a has previously received some attention due to its typologically rare requirement for a phonological host that is in the opposite direction from its syntactic affiliate – a ditropic clitic under Embick & Noyer’s (1999) classification (Klavans 1985; Cysouw 2005; Peterson 2001), and limited work has been done on capturing the cliticization and verb doubling phenomenon (Good 2005; Conathan & Good 2001).

In this paper, we revisit the Chechen and Ingush ‘a and advance the proposal that the clitic and its interaction with verb doubling are implemented exclusively in the post-syntactic component, under morphological and prosodic considerations. We demonstrate that the various aspects of the Chechen and Ingush data have close parallels to other effects analyzed as arising from PF operations, and contrast them to instances under the effect of syntactic operations. In so doing, we expand the attested range of cliticization phenomena while showing that this rare case still falls within the expected typology.

The paper proceeds as follows: In §2 we discuss further data from Chechen and Ingush, highlighting three typologically rare aspects of the phenomenon that any theory of cliticization must capture. In §§3–4 we present previous phonological and morphosyntactic approaches to the cliticization and verb doubling facts and discuss shortcomings of the proposals. In §5 we present a revised morphophonological analysis and discuss its theoretical ramifications and accounts for the typology of cliticization.

It must be emphasized that we do not distinguish between Ingush and Chechen with regards to coordination. This is supported by similar claims by Good (2005) and Jeschull (2004). However, future work would include teasing apart the differences in their coordination constructions.

2 Typological issues with Chechen/Ingush ‘a

There are three aspects of the particle ‘a and its associated verb doubling phenomenon that are considered typologically rare. In this section we present these in turn, then return to these aspects in further sections in developing an analysis.
2.1 Ditropic clitic

Fieldwork reports on Chechen and Ingush have characterized 'a as an enclitic based on traditional diagnostics for cliticization. However, since it serves as a clause chaining clitic, its syntactic affiliate is with the finite verb to its right. We do not expect the infinitival verb to be the syntactic affiliate, as we have seen that its position as a phonological host is equally satisfied by non-verbal elements. Thus we have the following schematic for 'a.

(5) [Host]= 'a V

This configuration has been characterized as a ditropic (two-placed) clitic by Embick & Noyer (1999). A typical clitic is non-ditropic, e.g. English 's which appears to the right of and is phonologically hosted by the affiliated noun phrase:

(6) [DP]= 's

Ditropic clitics have been controversial in the literature. While Klavans's (1995) influential typology of clitics treated ditropic and non-ditropic clitics equally, subsequent work such as Embick & Noyer (1999) have argued for a more restrictive characterization of clitics based on the paucity of attested ditropic cases. A recent survey by Cysouw (2005) further reaffirms the rarity of ditropic clitics and the potential for such configurations to be epiphenomenal.

2.2 Verb doubling is vacuous

Word-level reduplication is commonly attested cross-linguistically as serving a functionally iconic or emphatic role. For example, the Atlas of Pidgin and Creole Language Structures (APiCS) project has categorized reduplication into the following categories, a classification in which the symbolic uses (iconic and attenuating) receive primary status.

(7) a. Iconic reduplication: Denotes “iteration, plurality, distributivity, and/or intensity.”
   b. Attenuating reduplication: Serving a role similar to -ish suffixation in English.
   c. Word-class changing reduplication
   d. Other uses

English, which is impoverished of morphological reduplicaton processes compared to other languages, still exhibit phrasal iconic reduplication (Ghomeshi et al. 2004).

(8) a. Intensive reduplication
   It’s mine, mine, mine!
   b. Verbal contrastive reduplication
   Do you LIKE-like her?
   c. Nominal contrastive reduplication
   I don’t want a TUNA salad, I want a SALAD-salad.

Good (2005) argues that verb doubling in Chechen does not fit this semantic or pragmatic profile of symbolic reduplication. If this is so, then such a vacuous instance of reduplication at the phrasal level is cross-linguistically rare.

---

1Alternatively, the syntactic affiliate is the entire clause. However, we must then still account for why it appears internal to its affiliate.
2.3 A lexical host is inserted for cliticization

Clitics have the capacity to be mobile. In Polish, agreement clitics exhibit *promiscuous attachment* (Spencer & Luís 2012:85), taking as its host most preverbal stressed elements.

(9)  
a. Ja to robile=m
     I   it did=1SG
     ‘I did it’

b. Ja to=m robil

Further, consider the Tobler-Mussafia languages (Tobler 1875; Mussafia 1888); a set of languages in which pronominal clitics are immediately preverbal (10a) unless this places them in initial position (10b), in which case it becomes immediately postverbal (10c). Examples are from Franks and Bokovi (2001:174).

(10)  
a. Vˇ cera mi go dade Petko.
     yesterday me.DAT it.ACC gave Petko
     ‘Yesterday Petko gave it to me.’

b. *Mi go dade Petko vˇ cera.
     me.DAT it.ACC gave Petko yesterday
     ‘Yesterday Petko gave it to me.’

c. Dade mi go Petko vˇ cera.
     gave me.DAT it.ACC Petko yesterday

In contrast, the related Slavic language of Macedonian permits initial clitics, and bans post-verbal clitics. Thus Macedonian “fails to repair” the initial clitic cluster.\(^2\)

The table below summarizes the variety in cliticization. While each of the phenomena discussed above have been broadly attested cross-linguistically with variation, verb doubling is a distinct, rare mechanism for satisfying a requirement on clitic placement that must be accounted for in any theory of cliticization.

(11) Clitic positioning strategies

<table>
<thead>
<tr>
<th>Clitic process</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relatively free movement to hosts</td>
<td>Polish</td>
</tr>
<tr>
<td>Movement to 2nd position</td>
<td>Wackernagel languages</td>
</tr>
<tr>
<td>Movement to 2nd position only</td>
<td>Tobler-Mussafia languages (Bulgarian)</td>
</tr>
<tr>
<td>if otherwise initial</td>
<td></td>
</tr>
<tr>
<td>No repair</td>
<td>Macedonian</td>
</tr>
<tr>
<td>Verb doubling(^3)</td>
<td>Ingush and Chechen</td>
</tr>
</tbody>
</table>

\(^2\)We are wording the discussion as if it were a phonological constraints-and-repairs problem, but this should be taken to be a descriptive generalization. Franks & Bošković (2001) provide compelling evidence that the Tobler-Mussafia effect is sensitive to syntactic properties.

\(^3\)Although we exclusively discuss doubling of verbs, the theory does not immediately preclude reduplication of this sort from applying to other lexical categories.
3 Syntactic considerations

There have been two prior approaches for verb doubling and cases of syntactic reduplication in general. We discuss issues that such analyses encounter when applying them to Ingush and Chechen.

3.1 Verb doubling as movement

Under the copy theory of movement, verb doubling may be analyzed as the pronunciation of both copies of a verb which has undergone movement. For example, consider predicate clefting data from Vata (Koopman 1984). In (12a), a focused verb is reduplicated at the left periphery. A similar effect is obtained in (12b), but under the presence of the auxiliary da, the verb appears lower in the clause.

(12) a. li à li-da zué saká
     eat we eat-PAST yesterday rice
     ‘We ATE rice yesterday.’

b. li O da saká li
     eat she/he PERF-AUX rice eat
     ‘She/he has EATEN rice.’

Nunes (2004) analyzes the data as an instance of a verb that has moved from its TP-internal position to a higher focus projection (13a). If an auxiliary is present, movement of the main verb to T does not occur and the secondary trace of the verb that is pronounced is in its base position (13b).

(13) a. \[FocP \langle V^0 \rangle + Foc^0 [TP \langle V^0 \rangle + T^0 [VP \ldots \langle V^0 \rangle \ldots ] ] ]

b. \[FocP \langle V^0 \rangle + Foc^0 [TP T^0 [VP \ldots \langle V^0 \rangle \ldots ] ] ]

Movement-based analyses have also been invoked for clitic positioning. Recall the Tobler-Mussafia languages discussed in §2.3, which we reproduce here: in Bulgarian, pronominal agreement clitics usually occupy the immediately preverbal position (14a) with no intervening elements (14b). Example (14c) shows that they are not second position clitics.

(14) a. Vˇcera mi go dade Petko.
     yesterday me.DAT it.ACC gave Petko
     ‘Yesterday Petko gave it to me.’

b. *Petko mi go vˇcera dade.
     Petko me.DAT it.ACC yesterday gave

c. Vˇcera Petko mi go dade.
     yesterday Petko me.DAT it.ACC gave

\[Similar analyses has been proposed for verb doubling in Mandarin Chinese (Cheng 2007) and in Nupe (Kandybowicz 2008). These are not the most direct applications of the copy theory of movement: Nunes considers the higher verb copy to be part of an independent chain that arises from morphological merger of the verb with the focus head. Hence the two overt copies of the verb are not due to pronunciation of both links in a movement chain, but rather due to pronunciation of links in two different chains.]
When the clitic-verb complex is sentence-initial, the clitics switch to the immediately postverbal position.

(15) a. *Mi go dade Petko včera.
    me.DAT it.ACC gave Petko yesterday
    ‘Yesterday Petko gave it to me.’

b. ✓ Dade mi go Petko včera.
    gave me.DAT it.ACC Petko yesterday

Franks & Bošković (2001) analyze the clitics as undergoing movement to a higher position in the CP domain, creating a movement chain. If the higher position is ruled out by the post-syntactic requirement on non-initiality of clitics, then it is the lower copy in the base position that is pronounced. If it is not initial, then the higher (pre-verbal) copy is pronounced based on general principles of pronunciation of chains.

3.2 Verb doubling as an abstract emphatic element

A recent development in accounts of verb doubling is the introduction of an abstract morpheme whose phonetic realization requires reduplication. Kimper (2008) discusses the work on syntactic reduplication via pronunciation of movement chains as presented above and discusses the shortcomings of an analysis in which doubling and alternations only arise from a choice in pronunciation of chains. Kimper proposes that what is driving movement is a reduplicative morpheme, and the form in doubling constructions do not match because they belong to the same movement chain but rather because the reduplicative morpheme enforces similarity in its pronunciation.

Kimper does not make explicit what exactly can introduce the reduplicative morpheme into the syntactic derivation, but all of the examples involve some sort of intensification, focus, or emphasis, and he writes: “In syntactic reduplication, some semantic meaning is realized by copying of some syntactic constituent” (emphasis mine). Such a link to semantic content is also true for the class of analyses which utilize the copy theory of movement: a focus or emphasis position or a focus element which triggers morphosyntactic operations is present in them. Indeed, ‘a does appear in cases where focus is present: Peterson (2001) reports that the clitic is used for concessive emphasis, as in (16a), or in non-verbal focus, as in (16b). However, we see in both examples that they pattern with nominal coordination uses of ‘a (16c) in being final: after either the verb or the entire concessive clause in the first case, and after the focused element in the second case.

(16) a. Ajšiet j-ilx-ača=’a Muusaa v-ax-anz-ar.
    Aisha AGR-cry.TRCV=’a Musa AGR-go-NEG-PAST
    ‘Even when Aisha cried, Musa didn’t go.’

b. Ahmad, sialxana=’a wiina, dwa-vagh-ara.
    Ahmed yesterday=FOC stay.ACV DEIX-go-PAST
    ‘Ahmed stayed YESTERDAY and left.’
Revisiting verb doubling in Chechen and Ingush

c. Ha’a, louzar=’a, biegazh=’a myshta xular joax hwaalxagh?
yes dance=’a games=’a how be.IMP QUOT formerly
‘Yes, what kinds of dances and games were there formerly?’

Therefore, if syntactic operations are being triggered by focus or emphasis, it must be localized to the clausal coordinating context with the presence of ’a, i.e., the context where native speakers report no emphatic force.

One caveat is that focus and verb doubling do co-occur, optionally, in the context of emphatic negation in Chechen and Ingush:

(17) (aala) ma aala!
say.INF NEG say.INF
‘Don’t (even) tell!’

The distribution of ’a and verb doubling within the languages does suggest a diachronic pathway towards the current system. First, perhaps ’a as a coordinating particle did have the syntax and semantics of emphasis. For example, Ohori (1992) suggests that among the clause chaining elements in Japanese, two of them seem to only differ in whether it encodes emphatic assertion.

(18) Samui node/kara kaze-o hiita.
cold because flu-ACC get.PAST
‘Because it is cold, I caught the flu.’

(19) Jinkō-ga antē suru-to kēzai-ga hattatsu suru.
population-NOM stable do-then economy-NOM develop do

Iya, kēzai-ga hattatsu suru-kara/??node jinkō-ga antē suru.
no economy-NOM develop do-KARA/NODE population-NOM stable do

‘When the population stabilizes, the economy will take off. No, it is precisely because the economy takes off, the population stabilizes.’

Although we see in (18) a nearly equivalent meaning between kara and node being obtained, in cases such as (19) where the emphatic force is brought forward in the discourse, node is strongly dispreferred in favor of kara. Hence a diachronic link between emphasis and clause chaining appears at least tenable.

We posit that the departure of ’a in its position from the other uses of ’a arose from prosodic considerations which we elaborate in further sections. Verb doubling as a repair may have arisen as a syntax-phonology interaction along the lines of more traditional cliticization phenomena, which was later reanalyzed following the loss of emphatic force in the coordinating construction.

To conclude, previous analyses that use syntactic mechanisms to account for verb doubling have exploited the semantics of focus. Such an analysis must reconcile the absence of similar effects in actual focus contexts in Chechen and Ingush. We therefore advance an alternative in which verb doubling has been reanalyzed as a morphological operation which is activated under prosodic considerations. Before presenting our analysis, we first discuss a previous prosodic analysis.
4 Towards a prosodic analysis: Good (2005)

Good (2005) proposed a phonological template that accounts for the Chechen and Ingush facts. We present it here and discuss issues of overgeneralization.

The basis for Good’s analysis lies in a comparison to prosodic minimality phenomena at the word level. In a number of languages, words must have a minimal number of syllables, and further, it is often the case that reduplication is employed to satisfy such a requirement. Good discusses two cases from the Bantu family. The first is from Ndebele: imperatives are generally formed with the bare verb stem and a theme vowel.

\[(20)\]
\[
\begin{align*}
\text{a. } & \text{lim-a} & \text{‘cultivate!’} \\
\text{b. } & \text{bamb-a} & \text{‘catch!’} \\
\text{c. } & \text{thum-a} & \text{‘send!’}
\end{align*}
\]

However, if the stem is -C- or -CC-, then the imperative construction would be monosyllabic. To avoid this, an empty morpheme yi- is prefixed:

\[(21)\]
\[
\begin{align*}
\text{a. } & \text{yi-z-a} & \text{‘come!’} & *z-a \\
\text{b. } & \text{yi-dl-a} & \text{‘eat!’} & *dl-a \\
\text{c. } & \text{yi-lw-a} & \text{‘fight!’} & *lw-a
\end{align*}
\]

Similarly, consider the case of Ciyao (Ngunga 2000). In this language, it is the morpheme which must be minimally disyllabic. Perfectivity, which is expressed through reduplication, may result in further reduplication to satisfy this requirement.

\[(22)\]
\[
\begin{align*}
\text{a. } & \text{diile-diile} & \text{‘eat.PERF’} \\
\text{b. } & \text{wiile-wiile} & \text{‘die.PERF’}
\end{align*}
\]

\[(23)\]
\[
\begin{align*}
\text{a. } & \text{taataa-ta} & \text{‘name.PERF’} & *ta-ta \\
\text{b. } & \text{waawaa-wa} & \text{‘die.PERF’} & *wa-wa
\end{align*}
\]

Thus Good analyzes verb doubling as a consequence of a similar minimality requirement, but at the phrasal level. Whereas the Bantu facts represent a constraint of $\omega \geq 2\sigma$, where every phonological word must at least be disyllabic, under Good’s analysis, there is a constraint $\varphi \geq \omega \omega$, where every phonological phrase must have at least two words, active in Ingush and Chechen.

The immediate issue which Good encounters is that uncoordinated intransitive verbs may stand alone.

\[(24)\] So voelu.
\[\text{I laugh.PRES}\]
\[\text{‘I am laughing.’}\]

When such a verb is coordinated, the verb is in a subminimal phonological phrase, the subject cannot host the clitic ‘a, and verb doubling is triggered. One proposal is that uncoordinated intransitive verbs are defective and that they can form a phonological phrase with the subject, satisfying the phrasal minimality constraint. The alternative which Good argues for is that the minimality requirement is subject to a non-derived environment blocking (NDEB) condition. As an analogue, consider the process of velar deletion in Turkish.
Revisiting verb doubling in Chechen and Ingush (Inkelas 1998). If a vowel-initial suffix such as the accusative and dative markers cause a stem-final velar to appear intervocally, then the velar is deleted, as in (25). However, stem-internal intervocalic velars are permitted (26). Example (26b) shows both cases: the stem-internal $g$ is preserved but the stem-final $k$ is deleted under affixation.

\[(25)\]
\[
a. \text{bebek} \text{ ‘baby’ katalog ‘catalog’} \\
b. \text{bebe-i ‘baby.\text{ACC}’ katalo-u ‘catalog.\text{ACC}’} \\
c. \text{bebe-e ‘baby.\text{DAT}’ katalo-a ‘catalog.\text{DAT}’}
\]

\[(26)\]
\[
a. \text{guguk ‘cuckoo call’ *guuk} \\
b. \text{gugu-a ‘cuckoo call.\text{DAT}’} \\
   \text{*guu-a}
\]

Hence some phonological processes may only apply to derived environments such as at affixation boundaries. Good posits that such an effect may be observed with phrasal processes as well. He defines the notion of a derived constituent: “A syntactic constituent can be said to be phonologically derived if syntactic requirements force the inclusion of phonological material into the constituent which alters its prosodic structure.” As the clitic is presumed to have a position in the syntactic derivation, it generates a derived environment which activates the phrasal minimality constraint.

Good’s analysis predicts that the proposed extensions to phrasal phonology, namely templatic effects and non-derived environment effect sensitive to syntactic operations, ought to be robustly attested independently of cliticization contexts. However, he leaves the latter as an empirical issue, and the only example that Good cites for phrasal templates is Inkelas and Zec (1990) on Serbo-Croatian. There, a topicalized first name is said to be ruled out by phrasal minimality (27a) while larger constituents (27b-27c) are permitted.

\[(27)\]
\[
a. \text{* Petar voleo-je mariju} \\
   \text{Peter loved-AUX Mary.\text{ACC}} \\
   \text{‘Peter loved Mary.’} \\
b. \text{[Taj \v covek] voleo-je mariju.} \\
   \text{that man.NOM loved-AUX Mary.\text{ACC}} \\
   \text{‘That man loved Mary.’} \\
c. \text{[Petar Petrovi\v c] voleo-je mariju.} \\
   \text{Peter Petrovic loved-AUX Mary.\text{ACC}} \\
   \text{‘Peter Petrovic loved Mary.’}
\]

The analysis is also deficient in failing to account for the number of typological considerations surrounding the cliticization and verb doubling phenomena. It is left coincidental that the templatic effect, which already lacks empirical precedent, is applied to a particle belonging to the rare class of ditropic clitics. Further, Good must stipulate that the template only applies to the phonological phrase associated with the VP. While we remain neutral on the general question of whether phonological phrasing is sensitive to such fine details of the syntactic architecture, we will claim that asymmetries between the phrasing of standard verb phrases and other phrases are sufficient to account for the Ingush and Chechen facts.
It is indeed an empirical issue to find phenomena in other languages which may rule in favor of extending the word-level phonology to the phrasal domain. However, we will present a more restrictive analysis that utilizes mechanisms which have been more robustly used and simultaneously accounts for more of the typological considerations.

5 Morphophonological analysis

We now advance our alternative PF account of cliticization and verb doubling in Chechen and Ingush. Based on grammatical descriptions of Chechen utterances, it appears likely that the verb phrase invokes a phrasing in which the phrasal stress is non-final, and general prosodic constraints on cliticization are the motivation for the processes seen in the data.

5.1 Prosodic considerations

Mobility of clitics and their sensitivity to edges and phrasal ‘weight’ are well-attested – we have already seen edge-related phenomena in the Wackernagel and Tobler-Mussafia languages, and promiscuous attachment in Polish due to stress.

Another instance of stress sensitivity of clitics is in German, where a weak set of clitics are restricted in its distribution. Such clitics may not appear in a stressed position:

\[(28)\] Wen hast du *gesehen? [zǐː]/*[z̩̃a].
\[\text{who have you seen}\quad 3\text{SG.FEM.ACC}\]
\[\text{‘Who have you seen? Her.’}\]

Additionally, weak clitics must be hosted by a strong phonological host such as a preposition. In (29a) we see that the clitic may alternate with a freestanding word after mit, but lacking such a host, the weak clitic is ruled out (29b).

\[(29)\]
\[\text{a. Wir haben mit [dem/m] Franz darüber geredet}\]
\[\text{we have with DEF.MASC.SG.DAT Franz about.it spoke}\]
\[\text{‘We spoke with Franz about it.’}\]
\[\text{b. * M [def.neut.sg.dat] Kind hat sie eine Geschichte erzählt}\]
\[\text{DEF.NEUT.SG.DAT child has she one story told}\]
\[\text{‘She told the child a story.’}\]

Like the previous cases, we propose that the positioning of the clitic before the verb in conjoined clauses of Chechen and Ingush is also due to prosodic conditions. In support of this proposal, we cite Nichols’s (2011) grammar of Ingush. In it, she reports: “the last two accentable words [in any phrase or clause] constitute a part of of an intonational phrase,” with the penultimate element receiving primary stress. We note that Good’s analysis does not directly invoke the general tendency for weight attraction of clitics.

It follows that a coordinated phrase with ’a also has penultimate stress. Then the clitic is attracted to the penultimate element as a host, either due to weight considerations or due to phrasal edge avoidance. Further work is necessary to adjudicate between these two approaches.
Consideration of the mapping between syntax and phonological phrasing enables us to posit why it is only the conjoined clauses which exhibit this preposing of the clitic. Crucially, we have seen that nominal coordination and ‘a as a focus marker do not exhibit the ditropic behavior – it may appear at the right edge of the phrase and procliticize to the item to its left.

(30) Ha’a, louzar=’a, biegaż=’a myshta xular  jóax  hwallxagh?
       yes dance=’a games=’a how be.IMP QUOT formerly
   ‘Yes, what kinds of dances and games were there formerly?’

As focused elements are assigned exceptional prosody cross-linguistically, it should not be surprising that it would bear stress that can serve as a site for clitic hosting. Nominal coordination is more trouble-some to a prosodic analysis in the absence of acoustic data. Jeschull (2004) reports that nominal coordination may be implemented without ‘a but with comma intonation, in which the first syllable of the coordinand receives stress. It is an empirical question whether there is exceptional prosody for coordinated nominals which differ from chained clauses.

5.2 Morphophonological considerations

We have demonstrated that there are difficulties in implementing the realization of the doubled verb in the syntactic component. We thus advance the claim that the verb doubling is also post-syntactic in nature, implemented purely in the morphological component of the grammar. We invoke a theory of morphophonology that integrates the two aspects – that of Optimal Interleaving (Wolf 2008). The analysis does not crucially rest on this particular theory, and in particular, we will not discuss the Candidate Chains aspect of Wolf’s model. However, we find theoretical value in the fact that the Chechen and Ingush data is but one of a number of phenomena that have been analyzed in a single framework, rather than needing to propose drastic changes to the theory as is the case with Good’s (2005) previous analysis. In particular, in the next section we will show another example of a cliticization process in Kîšèdjê which has been analyzed under the Optimal Interleaving framework.

The principal notion of the model is that morphological exponence and evaluation of phonological constraints are performed within the same framework. Quoting Wolf: “morphological spellout (Halle & Marantz 1993’s ‘vocabulary insertion’) occurs in the phonological component of the grammar.” Hence morphological processes may be influenced by the phonology and vice versa. This is of course not a new idea, as it has its roots in earlier work on Lexical Phonology and Morphology (Kiparsky 1982, Mohanan 1982).

The Wolf-style constraints that I posit are as follows.

(31) a. **Dep(M):** Every morpheme in the output must have a correspondent in the input.
    b. **Max(M):** Every morpheme in the input must have a correspondent in the output.
    c. **OneCopy:** If a morpheme in the input has multiple correspondents in the output, assign a violation for each one after the first.
    d. **Faith(Cl):** A proclitic (resp. enclitic) in the input must be a proclitic (resp. enclitic) in the output.
e. **ClStress**: Clitics must be hosted by a phrasally stressed element.

Under Good’s analysis, the inertness of the phrasal template for simple intransitive verbs in non-coordinated contexts were accounted for by non-derived environment blocking. With our analysis, a syntactic structure without the coordinating clitic ‘a does not interact with any of the relevant clitic constraints, and hence surfaces faithfully, i.e., without movement or insertion of a doubled verb.

Now let us consider the case where a simplex verb is doubled under a coordinated clause.

(32) Conjoined intransitive verb

<table>
<thead>
<tr>
<th>Verb=’a</th>
<th>ClToStress</th>
<th>Faith(cl)</th>
<th>Max(M)</th>
<th>Dep(M)</th>
<th>OneCopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Verb=’a</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. ’a=Verb</td>
<td>(*!)</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. ‘a=Verb</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Verb</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Expletive=’a Verb</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. &gt; Verb=’a Verb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The verb alone cannot host the clitic ‘a because the clitic would either be final in its phrase (a) or not right-aligned in its word (b), ruling out the first two candidates. A clitic cannot be free-standing, ruling out candidate (c). Max(M) militates against outputs which fail to realize a morpheme from the input, so the clitic-less candidate (d) is ruled out. Finally, we crucially have Dep(M) and OneCopy: the latter is sensitive to an output in which a morpheme has multiple exponents, as in verb doubling, but the former is only violated with an exponent without a corresponding input. As a consequence, the ranking Dep(M) >> OneCopy rules out the candidate with an inserted expletive in favor of the candidate with a doubled verb.

The above tableau demonstrates the interaction of a primarily prosodic constraint such as ClToStress with a more general constraints on morphological exponence (Dep(M) and Max(M)).

Next, consider the case of a transitive verb with its object or another preverbal element, which we denote by Host. This element is in the input form, and hence no violation of Dep via verb doubling is necessary to satisfy the high-ranking constraints on clitic placement.

(33) Conjoined Transitive Verb (also Preverbal constructions)

<table>
<thead>
<tr>
<th>Host Verb=’a</th>
<th>ClToStress</th>
<th>Faith(cl)</th>
<th>Max(M)</th>
<th>Dep(M)</th>
<th>OneCopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Host Verb=’a</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Host ’a=Verb</td>
<td>*!</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. &gt; Host=’a Verb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Host Verb=’a Verb</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Finally, we consider the case where both an object and a preverbal particle is present. Recall that in such a case, it is the preverb and not the object that hosts the clitic. This is not surprising under the prosodic approach, as the preverb would always receive the phrasal stress as it is in penultimate position.
5.3 Infinitival form of the verb

The previous tableaux did not show inflectional features on the verb, which are certainly relevant because the doubled verb is infinitival while the original verb need not be. If we are to interpret the verb doubling in Chechen and Ingush as arising purely from the PF component, we require a model of the grammar which can access morphological variants at the point of prosodification. This may be a controversial step to take. However, we argue that it is still a weaker modification to the model than those which posit syntactic operations which are sensitive to phonological constraints.

6 Some typological implications

The grammar as modeled under this analysis has components which interact but are largely independent of one another. Thus we predict other cross-linguistic data which fall under this general umbrella of doubling and/or cliticization which are similar to the data observed in Chechen and Ingush. We present some evidence for this below.

6.1 Ditropic clitics are rare

The distribution of the coordinating clitic ‘a’ is consistent with the claim by Cysouw (2005) and others that ditropic clitics are epiphenomenal and hence rare. In Chechen and Ingush, it arose due to a particular interaction of constraints: non-finality/stress attraction of clitics, low-ranked restriction on multiple exponence, and faithfulness to the clitic’s status as an enclitic. The first constraint appears to be readily dominated, as we see that ‘a’ can quite commonly appear to the right of its host at the edge of (syntactic) phrases. The last constraint, when violated, would enable a clitic to behave as in the finiteness sensitive languages. In either scenario, we are left with a non-ditropic clitic.

6.2 Clitics are sensitive to morphological faithfulness

In incorporating aspects of Wolf’s morphophonological framework, we are lead to posit that clitics may be evaluated for MAX(M), that it remain in the output if it is present in the intermediate output of the syntactic component. Evidence that such a constraint interacts with more purely phonological constraints is provided by Nonato (2013) on Kísèdjè (Jê, Brazil).

In Kísèdjè, plurality is marked by a clitic =aj which appears to the right of nominative pronouns and to the left of accusative and absolutive pronouns. Thus in sentences with a

<table>
<thead>
<tr>
<th>(34) Conjoined Transitive Verb with Preverb</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Obj PV Verb='a</td>
</tr>
<tr>
<td>b. Obj PV Verb='a</td>
</tr>
<tr>
<td>c. Obj PV 'a=Verb</td>
</tr>
<tr>
<td>d. &gt; Obj PV='a Verb</td>
</tr>
<tr>
<td>e. Obj='a PV Verb</td>
</tr>
</tbody>
</table>
plural subject and plural object we expect two instances of $=aj$, as in (35).

(35) "hën=wa ”kê=aj $∅$-”khâm=aj s-ômu
  INFL=1.NOM also=PL 3.ABS-in=PL 3.ACC-see
  ‘We also saw them there.’

In the above example, there is a stressed preposition $khâm$ that intervenes between the two plural clitics. The language disprefers sequences of unstressed elements, and so the construction without an intervening stressed word is ungrammatical (36a). Instead, only one plural marker is realized, and it is three-way ambiguous between plural subject+object, subject, or object (36b).

(36) a. *"hën=wa ”kê=aj=aj s-ômu
  INFL=1.NOM also=PL=PL 3.ACC-see
  ‘We also saw them.’

b. ”hën=wa ”kê=aj s-ômu
  INFL=1.NOM also=PL 3.ACC-see
  ‘We also saw them / We also saw him / I also saw them.’

Another consequence of stress lapse avoidance is reported by Nonato. Both the clausal coordinating particle and the nominative pronouns are clitics. As with the previous examples, both clitics may appear when intervening material is present (37a). Moreover, if the pronoun is ergative, it is not a clitic, it is stressed, and may appear adjacent to the coordinating clitic (37b).\(^5\)

(37) a. [Canarana mâ=n=ka ”pâj] [=ne wâtà ka”pêrê=n=ka
  Canarana to=INFL=2.NOM arrive] [=and.ss what language=INFL=2.NOM s-arê?]
  3.ACC-say
  ‘You went to Canarana and what language you spoke there?’

b. [[i-”pôt] [=nyh ”kare $∅$-khuru]] mâ
  [[1.ABS-arrive]] [=and.DS.3 2.ERG 3.ABS-eat]] FUT
  ‘I will arrive and (then) you will eat it.’

The nominative pronoun deletes under adjacency to the coordinating particle.

(38) a. *hên [=ka ”pâj] [=ne =ka s-arê]
  INFL [=2.NOM arrive] [=and.ss =2.NOM 3.ACC-say]
  ‘You arrived and (then) you said it.’

b. hên [=ka ”pâj] [=ne s-arê]
  INFL [=2.NOM arrive] [=and.ss 3.ACC-say]
  ‘You arrived and (then) you said it.’

\(^5\) SS = same subject, i.e., the coordinating particle which is used when the subject of both conjuncts are the same. For mismatched subjects, and.DS (DS = different subjects) is used. Nonato reports that in addition to ergative pronouns, the absolutive pronouns, being prefixal, also do not delete when adjacent to a coordinating clitic.
Finally, we note yet a third repair strategy for prosodic requirements on clitic placement, which is the absence of a repair. Descriptively, the alternation between Bulgarian and Macedonian with respect to their pronominal clitics is a case of repair/no-repair. However, Franks & Bošković (2001) provide compelling evidence that the clitics in those languages are sensitive to syntactic properties and hence are undergoing syntactic movement. Although we do not have direct data, we will mention the corpus study by Riese (1984) for Northern Mansi (Vogul). The language has a conditional enclitic =ke, and based on the study of 223 conditional sentences, 67% of them had the conditional clitic appear immediately preverbally, 21% in other locations that the author believes to be conditioned pragmatically, and 12% in a verb-only conditional clause enclitic to the verb. Northern Mansi may fall in line with the Tobler-Mussafia and related languages in having syntactic movement of the clitic, but it is worth pursuing the possibility that this is an instance where a violation of a prosodic requirement is preferred over any other repair.

6.3 Verb doubling as a post-syntactic operation

As we noted, multiple cases of verb doubling constructions involving focus have had syntactic analyses advanced for them. We have proposed that verb doubling may also arise post-syntactically, as in Chechen and Ingush. Support for our proposal, then, would take the form of morphological verb doubling which is independent of a cliticization context. We claim that Breton exhibits such a pattern.

Breton is a Celtic language which has a V2 requirement in matrix clauses (Anderson 2005; Jouitteau 2012). The first position is typically used for topic or focus, but in the absence of such a target, expletive insertion or do support are applied instead. In a limited subset of verbs, which is also subject to dialect variation, the V2 condition may additionally be satisfied by verb doubling.

(39) a. Initial focus/topic constituent

\[ \text{Avaloù a zebran} \]
\[ \text{apples R eat.1SG} \]
\[ \text{‘I eat APPLES.’} \]

b. Expletive insertion

\[ \text{Bez’ ez an d’ ar jardin} \]
\[ \text{EXPL R go.1SG at the garden} \]
\[ \text{‘I am going into the garden.’} \]

c. Do support

\[ \text{Debriñ a ran avaloù} \]
\[ \text{eat R do.1SG.PRES apples} \]
\[ \text{‘I eat apples.’} \]

d. For a limited, idiosyncratic subset of verbs: verb doubling

\[ \text{Redek a redan bemdez} \]
\[ \text{run.INF R run.1SG every.day} \]
\[ \text{‘I run every day.’} \]
As in the Chechen case, the doubling is not strongly linked to emphasis or focus. Jouitteau cites the idiosyncratic selection of verbs which license the verb doubling as another argument for the doubling process to take place in the post-syntactic component. Jouitteau makes a stronger claim, that it applies in the morphological component and is insensitive to the phonology. Our analysis is amenable to this claim: we expect morphological verb doubling to apply for reasons independent of prosodic or cliticization considerations.

To summarize, we have found a number of instances where various aspects of the Chechen and Ingush phenomenon – verb doubling, prosodic sensitivity of clitics, and the mobility of clitics – have been independently attested in unrelated languages. We take this to be support that the data in Chechen and Ingush fall in line with such general principles, and that its relatively unique profile is due to the interaction of these principles in the post-syntactic component.

7 Conclusion

We have presented a preliminary analysis of the Chechen and Ingush coordinating clitic ‘a and its associated verb doubling construction that is largely driven by prosodic considerations. We claimed that the construction in Chechen and Ingush are sufficiently different from previous cases which have been claimed to be syntactically motivated, and that such analyses are difficult to adapt for the present case. Moreover, while ‘a appears in a number of contexts as a focus marker, the verb doubling and coordination construction lacks any semantic/pragmatic force of emphasis and is hence amenable instead to a morphophonological analysis.

The alternative that we presented made use of an articulated morphophonological component implemented under Wolf’s Optimal Interleaving framework. By doing so, we were able to break down the analysis into separate components which saw independent support in cross-linguistic data. As a result, we claim that the approach is superior to the previous templatic analysis by Good (2005).

That said, there remain many unresolved points due to the absence of native speaker consultants. First, the differences between Ingush and Chechen require investigation. Second, as the analysis crucially relies on differences in phonological phrasing among the different contexts in which ‘a is used, acoustic data is necessary to confirm the claims made in previous grammars. In particular, while Nichols (2011) claims that phrasal stress is assigned to immediately preverbal objects and preverbal particles, she does not make such a claim for adverb+V constructions. As adverbs and other adjuncts cannot host the coordinating ‘a, we would need a phrasal distinction to avoid appealing to syntactic differences between adjuncts and objects/preverbs.
8 References


The role of morphological markedness in inclusive/exclusive pronouns*

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1 Introduction

In this paper, I address the role of markedness in the inclusive/exclusive distinction in pronouns by taking into account evidence from suppletion in the context of the inclusive and exclusive. I will argue that there is an asymmetry in that pronouns can supplete in the context of solely the inclusive but not in the context of solely the exclusive, an observation that derives from markedness considerations. Suppletion refers to the phenomenon where a single lexical item is associated with two phonologically unrelated forms, the choice of form depending on the morphosyntactic context. A few canonical examples of suppletion in English are found in (1).

(1) good – better – best
    bad – worse – worst
    go – went

In particular, compare the suppletive good-better-best paradigm with the regular smart-smarter-smartest paradigm. In the latter, we observe that the root remains the same throughout the paradigm, viz. smart. In contrast, in the suppletive paradigm, we see that the root in the adjective surfaces as good, whereas in the context of the comparative and superlative we observe be(tt). Specifically, suppletion refers to a phonologically distinct realisation of a particular item in a particular context (see Corbett 2007 on specific criteria for canonical suppletion). In this case, the root of the lexical item GOOD is realised as good when it is the adjectival form but surfaces as be(tt) in the context of the comparative (and superlative). Though rare in absolute terms, suppletion (of lexical items) is frequently observed across languages in a (small) number of items (Hippisley e.a. 2004).¹

Turning to the inclusive-exclusive distinction, this grammatical contrast traditionally captures the difference whether the addressee (or addressees, represented by 2 below) are included or excluded from the set of referents which also contains the speaker, 1.² This can be represented as in (2), where 3 represents those who are neither speaker nor hearer (i.e. third person referents):

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* Many thanks to Peter Smith for invaluable discussion on the ideas expressed here. All errors are mine.
1 An important question concerns what does and what does not count as suppletion (Corbett 2007). Here, I take the criterion for noun suppletion to be singular-plural pairs identified as suppletive in prior literature, where these are strongly suppletive, i.e., not plausibly related by (possibly idiosyncratic) phonological (readjustment) rule(s).
2 In the following I use this traditional use of inclusive/exclusive; for more distinctions involving inclusion or exclusion of persons, see Siewerska & Bakker (2005).
When the inclusive is used, the addressee is crucially included, while the exclusive indicates that the addressee is excluded. This is a distinction that is frequently seen across languages (Cysouw 2003, Filimonova 2005). While the inclusive/exclusive distinction can be found in verb agreement affixes and possessive affixes as well, I here limit myself to inclusive/exclusive plural independent pronouns, such as in So (3).

Furthermore, the inclusive-exclusive distinction is also attested in other numbers, such as the dual and trial (Siewerska 2004), but again I leave this topic to future research and focus only on plural forms with the inclusive/exclusive distinction.

In the following, I first discuss how suppletion can serve as an evaluative tool to identify morphological structure, drawing on Bobaljik’s (2012) investigation into suppletion in adjectival paradigms (section 2.1) and my own research on suppletion in the nominal domain (section 2.2). In section 3, I start with a brief review of previous literature on the observation that the inclusive is more marked than the exclusive (Noyer 1992, Siewierska 2004, Cysouw 2003, a.o). Then, in section 3.2, I show that we find suppletion in the context of both the inclusive and the exclusive, as well as suppletion in the context of only the inclusive; however, the generalization that emerges is that suppletion in the context of only the exclusive is unattested (a potential counter-example from Dolakha Newar is discussed in section 3.4). In section 3.3, I discuss how this generalization supports the view that the inclusive is more marked than the exclusive, as well as arguing that, aside from being a structure detector, suppletion can also serve as an evaluative tool for identifying markedness relations. Finally, section 4 offers final remarks.

2 Suppletion as a structure detector

In this section, I briefly recapitulate Bobaljik (2012) and Moskal (2013), in which it is argued that suppletion data can serve as a detector of morphological structure.
2.1 Adjectival suppletion (Bobaljik 2012)

In a study of 73 distinct adjectival cognate triples, Bobaljik (2012) shows that not all suppletion patterns in comparative morphology are attested. Specifically, we observe patterns such as in (4), however, whilst apparently legitimate and a priori conceivable, the pattern in (5) is unattested.\(^3\)

(4) \begin{tabular}{lll}
POSITIVE & COMPARATIVE & SUPERLATIVE \\
long & longer & longest & AAA \\
good & better & best & ABB \\
bonus & melior & optimus & ABC \textit{(Latin)}
\end{tabular}

(5) *good better goodest *ABA

Bobaljik shows that the absence of ABA patterns is accounted for if we assume (i) the containment hypothesis, and (ii) late insertion. Specifically, the containment hypothesis is formulated in (6):

(6) The containment hypothesis: The superlative always properly contains the comparative

In effect, (6) proposes that it is a universal property of languages that if there is a superlative in the structure, then there necessarily must be a comparative in the structure. That is, the structure for any given superlative is as in (7) below.

(7) \begin{tikzpicture}
    \node {s} child {node {c} child {node {a} child {node {ADJ}}} child {node {SPR}}} child {node {CMPR}};
\end{tikzpicture}

Indeed, in the following languages, the comparative is overtly contained within the superlative, showing the structure in (7) transparently:

\(^3\) Another unattested pattern is AAB, where the superlative but crucially not the comparative is suppletive (e.g. *good-gooder-best). This is excluded by virtue of locality; in effect, if the comparative is not suppletive the superlative context is ‘too far’ from the root to cause suppletion. See Bobaljik (2012) for details.
It is important to emphasize that the containment hypothesis posits that the comparative is always contained within the superlative; this means a structure such as in (9) is not a legitimate grammatical object by virtue of the universal hypothesis in (6):⁴

\[
\begin{array}{c}
\ast s \\
\downarrow \\
a \quad \text{SPRL} \\
\downarrow \\
\text{ADJ}
\end{array}
\]

The second ingredient for ruling out the unattested ABA pattern is the assumption that syntactic structure is the input to morphology, which then has the task to convert syntactic structure into phonological material (Vocabulary Insertion, VI) (Distributed Morphology, DM; Halle & Marantz 1993). Crucially, phonological substance is provided post-syntactically (‘late insertion’) and occurs cyclically starting from the most deeply embedded element.

In such a framework suppletion is modeled as contextual allomorphy: a feature (set) has a context-free default exponent, but in a more specific context a different exponent takes precedence (Bobaljik 2012). Consider the VI rules in (10) and (11) below; these are the rules that are relevant to the abstract item √GOOD. Whilst (11) has no restrictions with regard to its application, (10) applies in the context of the comparative.

(10) \[ \sqrt{\text{GOOD}} \Leftrightarrow \text{be(t)} / \_ \text{CMPR} \]

(11) \[ \sqrt{\text{GOOD}} \Leftrightarrow \text{good} \]

---

⁴ Note that in a comparative structure, the superlative is not necessarily present; as such, a structure as in (i) is perfectly legitimate.
Furthermore, per the Elsewhere principle (Kiparsky 1973) the more specific VI rule in (10) will be preferred over the less specific VI rule in (11). That is, given that (10) makes reference to the more specific environment of the comparative, it must be employed in that context; the VI-rule in (11) will apply as a default but given the existence of the rule in (10) crucially not in the context of the comparative.

The containment hypothesis combined with late insertion gives us the tools to derive *ABA: given that precedence to the most specific VI rule must be given (late insertion) and each superlative must contain a comparative (containment hypothesis), if the comparative suppletes the superlative necessarily must do so too.

In sum, as we can see, suppletion data provides crucial evidence for the structure of adjectives, the containment hypothesis in particular.

2.2 Nominal suppletion (Moskal 2013, to appear)

Reporting on a study of some 80 languages, in Moskal (2013, to appear) I show that suppletion data from lexical nouns and pronouns reveals two asymmetries: (i) in lexical nouns number-driven root suppletion is common while case-driven root suppletion is virtually unattested, and (ii) in contrast to lexical nouns, pronouns commonly supplete for both number and case.

Focusing first on lexical nouns, consider data from Ket (Werner 1997). In (12), we see some regular nouns in which the plural is expressed by a nasal suffix:

(12)        SG          PL
Am          ama-ŋ       ‘mother’
Doʔn        doʔna-ŋ      ‘knife’
Kyl         kyle-n       ‘crow’

In contrast, the nouns in (13) display root suppletion in the context of the plural; (the roots of) the singular forms bear no direct relation to (the roots of) the plural forms.

(13)        SG          PL
O-ks’        aʔq          ‘tree’
Diʔl’        kʌʔt          ‘child’
Keʔt         ḏeʔ-ŋ         ‘man’

The crucial contrast identified in Moskal (2013, to appear), though, is that whilst we see patterns as in (13) where a nominal root suppletes for number, nominal root suppletion in the context of case is virtually not observed.5

5 There are a few apparent counter-examples to the proposed ban on case-driven root-suppletion in lexical nouns: in Archi, we observe ḏbtu ‘father.ABS’ vs. ṭmμu ‘father.ERG’, where the root of the lexical noun changes depending on which case it is in; however, Archi’s father is a singulare tantum and in Moskal (to appear), I
In contrast, in pronouns we see that suppletion can occur in the context of number as well as case. Consider data from Latvian (Mathaissen 1997); in (14), we see the familiar case of number-driven suppletion in second person pronouns: the pronominal stem in the singular is different from that in the plural.

(14)       SG     PL
            NOM  tu   jūs
            DAT  tev  jūms
            ACC  tevi jūs

In (15), however, we also observe case-driven suppletion in first person pronouns in Latvian; that is, the pronominal stem not only differs depending on number information, but the pronominal stem in the first person singular is different depending on case: the nominative form es is different from that of the dative and accusative form man(i).

(15)       SG     PL
            NOM  es   mēs
            DAT  man  mums
            ACC  mani mūs

In Moskal (to appear, 2013), I argue that these asymmetries between lexical nouns and pronouns can be accounted for by their structural differences, combined with locality effects as proposed in DM, specifically, the cyclicity hypothesis.

   Specifically, the structure of lexical nouns (16) and pronouns (17) is different in that the former have a root and a category defining node n (standardly assumed in DM), whereas pronouns have less structure (Postal 1969, Longobardi 1994, Déchaine & Wiltschko 2002), crucially lacking a root and category defining node. In (16) and (17) I furthermore assume Greenberg’s Universal 39 and assume that number (#) is located closer to the base than case (K).

propose that Archi’s ‘father’ is defective in that it lacks a number node. In essence, the lack of number opens up the possibility for (limited) case-driven root-suppletion; indeed, three other nouns that display case-driven root-suppletion (‘child’ in Archi; ‘water’ and ‘son’ in Lezgian) are analysed in a similar way; see Moskal (to appear) for details.

Note that “D” is merely used as a label here.
Furthermore, DM assumes (some version of) the cyclicity hypothesis: that is, accessibility of structure is domain-dependent (Embick 2010, Bobaljik 2012). More specifically, certain nodes in the structure function as domain delimiters and morphological processes are confined to operate within this domain.

A natural choice of cyclic nodes would be category heads (Embick 2010). Then, on the assumption that cyclic heads induce spellout of their sister (Chomsky 2000, 2001), in the case of lexical nouns (16), \( n \) causes spellout of the root. Furthermore, on the hypothesis that spellout immobilizes spelled out material (Embick 2010, Bobaljik 2000, 2012; see Scheer 2010 for an overview), the root would then be closed off for further interaction; this is represented in (18).

\[ (18) \]

\[
\begin{array}{c}
\text{Root} \\
\text{spellout}
\end{array}
\]

However, if that were the case, no allomorphy would ever cross a category-defining node, since the root would always be closed off (Embick 2010). Clearly, this is not correct, as evidenced in the case of number-driven (nominal) root suppletion, comparative-driven (adjectival) root suppletion, past-tense-driven (verbal) root suppletion, etc.

As such, the root needs to have access to a bit more structure. In Moskal (to appear, 2013), I propose that the relevant condition is ‘morphological subjacency’, where an element can establish a relation across one cyclic node, but not across two (or more) (cf. the syntactic subjacency condition, Chomsky 1973).\(^7\)

Now, as represented in (19), under morphological subjacency number (\( # \)) is accessible and a number value such as plural can govern suppletion of the root. However, case (\( K \)) is too far removed at the point that the root is subject to VI and, as such, VI rules making reference to case values are uninterpretable.

\[ (19) \]

\[
\begin{array}{c}
\text{Root} \\
\text{K}
\end{array}
\]

In contrast to lexical nouns, pronouns crucially lack a category-defining node in their structure; as such, no domain is created low in the structure and both number and case can potentially govern suppletion.

---

\(^7\) Morphological subjacency is used here for expository reasons; see Moskal (2013) for details, specifically with regard to the motivation of the locality restriction.
In sum, we again see, this time on the basis of suppletive items in the nominal domain, that suppletion data plays a crucial role in providing evidence for morphological structure as well as (the precise formulation of) the cyclicity hypothesis.

3 Markedness and the inclusive/exclusive distinction

3.1 The inclusive is more marked

Returning to the inclusive/exclusive distinction, morphological marking of inclusive and exclusive (first) person (plural) is relatively frequent cross-linguistically (Cysouw 2013). Either the inclusive form or the exclusive form can be morphologically marked (Harbour 2011). Indeed, in (21), we see that in Itzaj Maya (Hofling 2000) the inclusive has an additional morpheme -e’ex compared to the exclusive form.

(21) Inclusive marking

<table>
<thead>
<tr>
<th>PERSON</th>
<th>PL</th>
<th>1EXCL</th>
<th>1INCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1EXCL</td>
<td>(in-)to’on</td>
<td>1EXCL</td>
<td>(in-)to’on- e’ex</td>
</tr>
</tbody>
</table>

In contrast, (22) we see that in Limbu (van Driem 1987) it is the exclusive that is expressed by an additional morpheme -ge compared to the inclusive form.

(22) Exclusive marking

<table>
<thead>
<tr>
<th>PERSON</th>
<th>PL</th>
<th>1EXCL</th>
<th>1INCL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1EXCL</td>
<td>angi-ge</td>
<td>1INCL</td>
<td>angi</td>
</tr>
</tbody>
</table>

However, as noted by others, the first person inclusive is a marked category (Noyer 1992, Siewierska 2004, Cysouw 2003, a.o.). For instance, while exclusive marking is attested,

---

8 See Cormier (2005) for an opposing view where it is the exclusive that is more marked than the inclusive. She bases this on two aspects: (i) the prevalence of Australian languages to mark the exclusive with an additional morpheme (cf. data from Limbu in (22)); and (ii) the observation that in case a language loses the distinction between inclusive/exclusive it is overwhelmingly the inclusive category that survives (see also Lichtenberk 2005). However, the prevalence to mark the exclusive disappears when taking into account a broader set of languages (Harley & Ritter 2002; see also LaPolla 2005). Secondly, the survival of the inclusive rather than the exclusive is a trend and not a universal, as exemplified by Lak, Ubykh, some Lezgie languages and Dargi
inclusive marking seems to be much more common (see also Harley & Ritter 2002); see also LaPolla (2005), who comes to a similar conclusion in a study on the inclusive/exclusive contrast in Tibeto-Burman languages. It is important to stress that whilst there is a clear trend towards inclusive marking as opposed to exclusive marking, both types of clusivity can be morphologically marked.

A further asymmetry between the inclusive and exclusive is noted by Cysouw (2013). There are a few languages that have a special pronoun for the inclusive, but the marking of the exclusive is identical to the first person singular (see also Sokolovskaya 1980); for instance, in Canela-Krahô (Popjes & Popjes 1986), we see that the inclusive is expressed by cu but for the singular as well as the (plural) exclusive the same morpheme is used: wa.

(23)  

Excl. + ‘I’

<table>
<thead>
<tr>
<th>PERSON</th>
<th>SG</th>
<th>PL</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXCL</td>
<td>wa</td>
<td></td>
</tr>
<tr>
<td>INCL</td>
<td>cu</td>
<td></td>
</tr>
</tbody>
</table>

The situation where the exclusive is syncrletic with the first person singular is relatively common; it has been attested among native American languages, the Papuan languages of New Guinea and there are various incidental examples (Cysouw 2005).

Conversely, the reverse situation is unattested: we do not observe the use of an identical morpheme for the (plural) inclusive and first person singular while having a separate special morpheme for exclusiveness. Note that in this case, it does not seem to be a trend but seems genuinely unattested.9

3.2 Suppletion

With regard to suppletion, we observe that suppletion can occur in the context of both the inclusive and exclusive, such as in e.g. Manam, Boumaa Fijian, Chamorro, amongst others. In (24), this is exemplified by Paraguayan Guaraní (Gregores & Suárez 1967): both the exclusive form ore as well as the inclusive form yane are suppletive with respect to the first person singular form še (see also data from So in (3) above).

---

9 However, see Cysouw (2005) for a single purported case in Binandere where the suffixes for both first person singular and (plural) inclusive are -ana, while the suffix for the exclusive is -ara. This syncrleticism seems to be a recent development and Cysouw (2005:77) suggests it might be “an extension of an original first-person singular reference of -ana.”
Interestingly, though, we do identify an asymmetry between morphological inclusive and exclusive marking: whilst pronoun suppletion in the context of solely the inclusive is attested in a variety of languages, we do not seem to observe pronoun suppletion only in the context of the exclusive. Consider data from Evenki (Nedjalkov 1997) below in (25), in which we observe pronoun suppletion in the context of the inclusive but not in the context of the exclusive: the form for first person singular bi is clearly related to the plural exclusive form bu (cf. the singular/plural relation in second person: si vs. su), however, the plural inclusive form mit bears no relation to the first person singular form bi.

\[(25)\quad \text{Suppletion in the context of inclusive} \quad \text{PERSON} \quad \text{SG} \quad \text{PL} \]

\[
\begin{array}{ccc}
\text{1} & \text{bi} & \\
\text{1EXCL} & \text{bu} & \\
\text{1INCL} & \text{mit} & \\
\text{2} & \text{si} & \text{su} \\
\text{3} & \text{nungan} & \text{nungartyn}
\end{array}
\]

Indeed, whilst the pattern in (25) occurs in a variety of languages (e.g., Dumi, Sinangoro, Jarawara, Kwaza, amongst others), I have not found any language that displays the reverse situation. That is, we do not seem to find suppletion in the context of the exclusive without also having a suppletive variant in the inclusive (for an apparent counterexample, see section 3.4 on Dolakha Newar below). As such, we see that suppletion data show additional support for an asymmetry between the inclusive and exclusive.

### 3.3 Markedness

In this section, I argue that the discrepancy between only the inclusive being a potential context for suppletion, while only the exclusive is not, can be explained by assigning a bigger role to markedness in representations for person (cf. Wiese 2005, and Bobaljik 2012). First consider the representations for person below (Bobaljik 2008; see also Harley & Ritter 2002, Cysouw 2003, McGinnis 2005, Harbour 2011, a.o.):
From the table in (26), it follows that the feature configuration for the inclusive, [speaker, hearer], is more marked than that for the exclusive, [speaker], since, crucially, the features characterizing the exclusive are contained within the more marked inclusive. As such, we can formulate a person markedness hierarchy for first person as follows: [speaker] (first person singular) being less marked than [speaker, plural] (exclusive) which in turn is less marked than [speaker, hearer, plural] (inclusive).\(^{10}\)

Furthermore, in the area of phonology, Calabrese (2005) proposes that (phonological) processes can be sensitive to either marked features or both unmarked and marked features, but crucially not exclusively to unmarked features (see also, notably, Nevins 2010 for the same sensitivity restriction in the area of vowel harmony).

Extending this idea to the suppletion data in section 3.3, I suggest here that either marked person features can govern suppletion, or both unmarked and marked person features can govern suppletion, but unmarked person features cannot be the sole governors of suppletion (see also Calabrese 2008). As such, in languages where we observe suppletion for both the inclusive and the exclusive (such as Paraguayan Guaraní in (24) above), both unmarked (exclusive) and marked (inclusive) features are available to condition suppletion. In languages where suppletion only occurs in the inclusive (such as Evenki in (25) above), only the marked feature, inclusive, is salient and can govern suppletion. However, it is impossible for only exclusive to govern suppletion, since this would mean that only the unmarked feature would cause suppletion, but the marked value would not. That we do not find this state of affairs shows that suppletion is not only an identifier of morphological structure, but it is also an evaluative tool for identifying markedness relations.

An important question pertains to what can or cannot be sensitive to markedness relations. Indeed, we have seen that the overt realization of a morpheme for an unmarked (exclusive) or marked (inclusive) feature might display a trend towards expressing the marked rather than the unmarked feature, but it crucially is not a universal (see also footnote 9 above). In contrast, the suppletion data seem to constitute a discrete pattern of the pronominal base failing

\(^{10}\) Note that this cannot be captured as straightforwardly in a binary approach to person features.
to undergo suppletion in the context of only the exclusive.\textsuperscript{11} What I propose here is that in operations that require \textit{accessibility} of features, for instance to condition allomorphy (suppletion), we do not see tendencies but rather there are universal conditions. That is, reference to exclusively unmarked features is categorically ruled out: if a language suppletes for the exclusive (unmarked) feature it must necessarily supplete for the inclusive (marked) feature.

\section*{3.4 Dolakha Newar}

In this section I discuss data from Dolakha Newar (Genetti 2007), which at first glance seems to constitute a counter-example to the claim that suppletion never occurs exclusively in the context of the exclusive. Consider the data in (27):

\begin{align*}
\text{(27) Apparent suppletion in the context of exclusive} \\
\text{PERSON} & \quad \text{SG} & \quad \text{PL} \\
1 & \quad ji & \quad isi \\
1\text{EXCL} & \quad isi \\
1\text{INCL} & \quad \text{chi-ji}
\end{align*}

While the inclusive form \textit{chiji} transparently contains the singular form \textit{ji} to which a prefix \textit{chi-} is added, the exclusive seems to display a suppletive variant \textit{isi}.

Looking at the second person pronoun, however, given in (28), reveals that its form is the familiar prefix, \textit{chi}. As such, the inclusive \textit{chiji} form appears to be transparently composed of a morpheme hearer (\textit{chi}) and a morpheme for speaker (\textit{ji}).

\begin{align*}
(28) \quad \text{PERSON} & \quad \text{SG} & \quad \text{PL} \\
2 & \quad \text{chi} & \quad \text{chi-pen}
\end{align*}

As such, it seems that the inclusive is a compound pronoun of first and second person. Indeed, I suggest that the ‘inclusive’ has undergone morphological fission (see Arregi & Nevins 2012 and references therein), splitting up a single feature bundle containing both hearer and speaker into two separate feature bundles [hearer] and [speaker].\textsuperscript{12} This would lead to the following VI rules for the features discussed here:

\textsuperscript{11} Similarly, attested and unattested syncretism of first person singular with the inclusive and exclusive, respectively, seems another universal pattern (bar the case of Binandere, see footnote 10).

\textsuperscript{12} This analysis raises the question about the exponent of the plural feature in the inclusive form. At this point, I suggest that the plural deletes in the relevant context (note also that a form which is composed of speaker and hearer is necessarily non-singular, see also below on minimal/augmented systems); and I leave the details of the analysis for Dolakha Newar, as well as the relation between the inclusive and second person in general, for future research. Relevant here is that Dolakha Newar does not constitute a clear counter-example to the claim that suppletion never occurs only in the context of the exclusive.
Consequently, Dolakha Newar can be analyzed as a Paraguayan Guaraní style language in which both marked and unmarked features are salient context to govern suppletion, but since we do not see the inclusive represented on a single morpheme it does not surface as suppletive. In effect, fission of the inclusive bleeds suppletion of the inclusive. As such, Dolakha Newar does not constitute a convincing counter-example to the claim proposed here.

4 Final remarks

In the above discussion, I argued that suppletion is an evaluative tool to identify limits on accessibility to condition allomorphy, not only in the sense of revealing morphological structure but I also extended Calabrese’s proposal to suppletion, arguing that allomorphy can be sensitive to either marked features or both unmarked and marked features, but crucially not exclusively to unmarked features. Specifically, the sensitivity operates at the level of vocabulary insertion, which is inherently a morpho-phonological process. However, it seems to be a more general property of morphology (see also Calabrese 2008); indeed, the observation that the singular can be syncretic with the exclusive but not with the inclusive (section 3.1) suggests that operations such as impoverishment are sensitive to the distinction as well.

Furthermore, we have seen that the overt realization of a morpheme for an unmarked (exclusive) or marked (inclusive) feature might display a trend towards expressing the marked rather than the unmarked feature. In contrast, in operations that require accessibility of features we do not see tendencies but universal conditions, such as reference to exclusively unmarked features being categorically ruled out.

Whilst the generalization identified in this paper is clear, there are a number of avenues to explore further. Specifically, another area of investigation would include dual (and trial) number, in addition to singular and plural. Furthermore, while I have focused on the traditional inclusive/exclusive contrast in this paper, there are more fine-grained distinctions (see Siewerska & Bakker 2005), which could reveal further patterns. In particular, languages that display a minimal/augmented contrast require further scrutiny. Finally, I have only focused on free pronouns, but the inclusive/exclusive contrast is also attested in various agreement morphemes, such as verbal agreement markers.

5 References


Toward a Comprehensive Model for Nahuatl Language Research and Revitalization

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1 Introduction

Nahuatl, a Uto-Aztecan language, enjoyed great political and cultural importance in the pre-Hispanic and colonial world over a long stretch of time and has survived to the present day.¹ With an estimated 1.376 million speakers currently inhabiting several regions of Mexico,² it would not seem to be in danger of extinction, but in fact it is. Formerly the language of the Aztec empire and a lingua franca across Mesoamerica, after the Spanish conquest Nahuatl thrived in the new colonial contexts and was widely used for administrative and religious purposes across New Spain, including areas where other native languages prevailed. Although the colonial language policy and prolonged Hispanicization are often blamed today as the main cause of language shift and the gradual displacement of Nahuatl, legal steps reinforced its importance in Spanish Mesoamerica; these include the decision by the king Philip II in 1570 to make Nahuatl the linguistic medium for religious conversion and for the training of ecclesiastics working with the native people in different regions. Members of the nobility belonging to other ethnic groups, as well as numerous non-elite figures of different backgrounds, including Spaniards, and especially friars and priests, used spoken and written Nahuatl to facilitate communication in different aspects of colonial life and religious instruction (Yannanakis 2012:669-670; Nesvig 2012:739-758; Schwaller 2012:678-687).

Rapid changes and profound threats appeared after the Mexican War of Independence in 1821, when the Spanish infrastructure which used Nahuatl alphabetic writing as an official medium for documentation and communication, especially at the level of local municipalities, disappeared. Integrating indigenous communities into national life was not among the aims of a new succession of governments, and Nahua communities became more and more isolated not only from each other, but also from the rest of Mexican society. Indigenous writing was no longer employed for legal purposes and for recording historical tradition within communities, and differences between regional linguistic variants increased. The foundation for present day Mexico’s adverse language ideology was established after the Mexican Revolution, when

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¹ Interlinear glossing abbreviation used in this article include ABS.SG (singular absolutive suffix), NPRES (non-present verbal suffix), OBJ.1SG (first person singular specific object prefix), OBJ.1PL (first person plural specific object prefix), OBJ.3SG (third person singular specific object prefix), POSS (possessive suffix), POSS.1SG (singular possessive prefix), SBJ.2SG (second person singular subject prefix), SBJ.3SG (third person singular subject prefix), and SG (singular subject suffix).

² According to the Instituto Nacional de Estadística y Geografía (Mexican National Institute of Statistics and Geography).

intellectual elites engaged in the creation of a new national identity. Although it was based in part on pride in a mythologized version of Mexico’s indigenous past, modern native groups, considered an obstacle to the modernization and progress of society as a whole, needed to be fully Hispanicized. Thus, today’s Mexican multilingualism can be characterized as a conflictive, substitutive, and diglossic bilingualism, in which the coexistence of different languages is considered a historical stage leading to a new monolingualism (Flores Farfán 2002:228). A widespread attitude of racism, along with an accelerating, discriminatory educational and mass media policy of Hispanicization has drastically slowed or virtually eliminated the intergenerational transfer of the language in Nahua communities. The pervasive ideology shared by indigenous and non-indigenous people alike considers native languages a chaotic amalgamation of mutually incomprehensible “dialects,” degenerated and impoverished under the sustained influence of Spanish, and thus not deserving the status of a language such as Spanish and English. Modern Nahua communities suffer both from what has been defined as a social dislocation originating in the lack of prestige and power, and from a closely related cultural dislocation, resulting from modernization and globalization (Grenoble 2011:34). Urbanization speeds up these processes, while the increasing use of Spanish, the national language in all domains of life, as well as massive migration to larger towns and to the United States, contribute to an ongoing disruption of language transmission.

2 The current status of Nahuatl

The negative language ideology which is shared by Nahuatl speakers themselves, other members of their communities, and the larger society, and sustained to a certain degree by academics, is based on several major assumptions. One is a belief in the degenerative impact of Spanish which leads to an inevitable reduction in language complexity and integrity, resulting today in “mixed dialects.” Another assumption is that the restriction of the use of language to the household and agricultural domains is responsible for an alleged disappearance of vocabulary linked to other spheres of life, including socio-political and ritual contexts. Indeed, from the first decades of contact, Nahuatl and other native languages began to evolve in response to the strong and long-term impact of Spanish, a process that continues today. However, our research shows that in spite of this heavy impact and the steadily growing number of bilinguals today in native communities, local variants of the language maintain a strong continuity with colonial Nahuatl. This fact is often denied in mainstream and popular ideology. By the same token, continuity is not sufficiently addressed and emphasized in existing scholarship and, as a result, views of modern Nahuatl in academic research have contributed to the current depreciated status of the language and its speakers. The artificial notion of “Classical Nahuatl” has long been considered the only correct and original form of the language, while modern “dialects” are often still seen as its corrupted, Spanish-influenced offspring. It is perhaps for this reason that Nahuatl dialectology has attracted relatively little attention among scholars (Canger 1988:29).
2.1 Contact-induced language change

The pioneering research on Nahuatl in post-conquest times was done by Karttunen and Lockhart (1976), who postulated three phases of adjustment to Spanish. Lockhart (1992) further proposed a fourth, partly overlapping stage, characterized by the development of a heavily Nahuatlized version of Spanish. Four general stages along with associated typological changes were also proposed by Jensen (2008). Studies of modern Nahuatl mostly deal with heavily Hispanized varieties and specific cases of language displacement (Canger 2001; Flores Farfán 1999, 2008; Hill and Hill 1986). However, there have been no systematic attempts to relate colonial, contact-induced changes to the structural diversity of modern varieties in terms of similarity to older Nahuatl and degrees of Hispanization as well as the role of historical, social, and cultural factors.

In Stage 1, extending from the arrival of the Spaniards to ca. 1540-1550, Nahuatl remained largely unaffected, though our most recent research based on the earliest documents identified so far and dating to the 1540s, reveals the incorporation of loanwords and even lexical calques. In Stage 2, dating approximately from the mid-sixteenth to the mid-seventeenth century, Nahuatl is characterized by the widespread borrowing of Spanish nouns undergoing phonological and morphological adaptations, loanblends combining morphemes of different origin, extensions of meaning of native vocabulary as well as borrowed verbs, which were treated as nouns by the speakers of Nahuatl. In Stage 3, which begins in the mid-seventeenth century and continues to the present, many simultaneous changes have taken place, including the borrowing of verbs and particles, the adoption of plural forms and phonemes absent in earlier Nahuatl, and the creation of lexical and lexico-syntactic calques. A fourth, partly overlapping stage, is characterized by interference through shift, resulting in a heavily Nahuatlized version of Spanish (Lockhart 1991:105-121; Melton-Villanueva 2012), which in turn contributed to the development of modern Mexican Spanish.

A systematic analysis of language data associated with the colonial period reveals a parallel, prolonged use of neologisms beyond Stages 1 and 2, often produced by combining existing words or by novel uses of affixes. The process of coining neologisms continued well beyond the first stage of contact into times when noun borrowing became widespread; moreover, it is also a common phenomenon in present varieties of Nahuatl. Lexical borrowing in the first two centuries of interaction mainly involved the introduction of terms and concepts which were absent in Nahuatl; today, older terminology is often replaced by its Spanish equivalents as meanings and contexts of use have changed. However, phonological and morphological adaptations occurring today are not much different from those attested throughout the colonial period, including the application of inflectional and derivational morphology.

Loanblends have been in use from the sixteenth century, including noun compounding (1-2), incorporation (3-4), and the creation of abstract/collective nouns (5):
Less common are imported affixes added to native stems, usually pointing to a more complex and sustained interaction between the two languages: for example, the Spanish word *chocolatera* ‘a chocolate vendor’, created initially from the Nahuatl *xocolatl* and the Spanish suffix -era, is attested in Nahuatl around 1650.

Lexical calques had entered the language in the sixteenth century, whereas lexico-syntactic calques are attested in the seventeenth century and continue to be a very productive mechanism today. Words appear in new syntactic contexts, including Spanish-influenced word order and new constructions:

6. *piya* ‘to own something’ (originally ‘to keep or have custody of something’; after Sp. *tener*)
7. *quipiya para*... ‘to have to [do something]’ (after Sp. *tener que*)
8. *casado ica* ‘to be married to...’ (after Sp. *casado con*)

We also deal with the innovative use of prepositions in prepositional phrases that correspond to the prepositions and syntactic structure of the source language:

9. *pan Tepecxitlan* ‘to/at Tepecxitlan’
10. *Niyaz huanya ta* ‘I'll go with you’

Changes of grammatical categories are also attested:

11. *Ninotoca Juan* ‘My name is Juan’ (lit. from Sp. *Me llamo Juan*)

In the last example, *toca*, originally a noun, *tocaitl*, became a reflexive verb corresponding to the Spanish *llamarse*. Also, a pragmatically marked word order in the target language becomes unmarked by reproducing the corresponding neutral word order in the source language, as in (12):

12. *Niyaz mohuanya* ‘I will go with you’, used instead of *mohuanya niyaz* ‘with you I will go’

It is common for relational words to gradually lose their possessors, as in (13):

13. *pan cuamezah* ‘on the table’ (instead of the more traditional *ipan cuamezah*)
Among common changes are the pluralization of inanimate nouns (although modern variants of Nahuatl did not completely replace the traditional form of pluralization limited to animate objects), or the new roles of an interrogative pronoun *tle/tlen/tlein* acquiring the functions of the Spanish subordinator *que*, and preposition *de*. A person’s speech, which has been traditionally reported in a direct manner (14), is now expressed through indirect speech (15):

(14) *Niquillih noconeuh, ‘Xiyauh tianquizco’* ‘I told my child, “Go to the market”’

(15) *Niquillih noconeuh ma yohui tianquizco* or *Niquillih noconeuh para yohui tianquizco* ‘I told my child to go to the market’

Thus, prolonged contact over several centuries resulted in simultaneous lexical, morphological, phonological, and syntactic adaptations that show clear patterns through the colonial period and continue to the present. Many of these phenomena, probably spurred by a growing presence of bilingual speakers, are typical of Stage 3 and originate in the middle and late colonial times. They extend in significant ways to modern variants of Nahuatl, where transformations in morphology and syntax under the influence of Spanish are obviously more widespread and profound than in late colonial sources, even if many contact-induced changes clearly follow patterns of transformation established already during much earlier stages of interaction. It is also becoming more and more clear in our research that language change in specific localities depended not only on the degree of contact and urbanization, but also on more subtle cultural factors, e.g., the strength of local indigenous organization and the continuity of the writing tradition in Nahuatl, which accounts for a relatively late occurrence of specific phenomena in areas of intense contact such as the Valley of Mexico and the Puebla-Tlaxcala region.

2.2 **Continuity between older and modern Nahuatl**

Today, both in more heavily urbanized zones, such as Tlaxcala and Puebla, and peripheral locations, such as northern Veracruz, close correspondences with earlier stages of language development are patent. They are easily recognizable in the lexicon in the massive survival of traditional terminology, as well as on the level of morphology, syntax, and phonology.

For example, the forms of the nominal possessive suffixes and the preterite are at an earlier stage of evolution in today's Eastern Huastecan variant than they were almost five hundred years ago in Central Mexico upon the arrival of the Spaniards. Possession of nouns is achieved in Nahuatl by the combination of eight possessive prefixes (first through third persons, singular and plural, as well as a human and a non-human non-specific prefix) and a set of possessive suffixes, which originated long before the Conquest as -hua [-wa:], followed by subject number markers of -Ø for singular and -n [-ŋ] for plural. Over the last five hundred years and in all variants, plural possessed animate nouns have continued to end in -huan [-waːŋ]. Through the process of
vowel raising, the word-final singular form, -hua [-wa],\(^3\) first became -hue [-we], and by the early sixteenth century had further progressed to -hui [-wi] after a few noun roots ending in a consonant, and -uh [-\(\lambda\)] or [-h] after a larger number of roots ending in a vowel. However, in the majority of cases singular possessed nouns ended in -Ø, because the possessive suffix had disappeared altogether. This is largely the case in all varieties today; however, peripheral varieties tend to have a larger proportion of singular possessed nouns ending in -hui [-wi] and -uh [-\(\lambda\)] or [-h]. The following are two examples of how the process of vowel raising and loss had progressed further almost five hundred years ago in Central Mexican Nahuatl than it has today in Modern Huastecan Nahuatl:

\[(16)\]

Classical Nahuatl (mid-sixteenth century) Modern Huastecan Nahuatl

\[\text{nopah} /\text{nopah}/ \quad \text{nopahhui} /\text{nopahwi}/\]
Ø-no-pah-[Ø]-Ø \quad Ø-no-pah-hui-Ø

\[\text{SBJ.3SG-POSS.1SG-medicine-[POSS]-SG} \quad \text{SBJ.3SG-POSS.1SG-medicine-POSS-SG}\]

‘It is my medicine.’ ‘It is my medicine.’

\[\text{ixoichi} /\text{ixo:tʃi}/ \quad \text{ixoichiuh} /\text{ixo:tʃi}/\]
Ø-i-xochi-[Ø]-Ø \quad Ø-i-xochi-uh-Ø

\[\text{SBJ.3SG-POSS.3SG-flower-[POSS]-SG} \quad \text{SBJ.3SG-POSS.3SG-flower-POSS-SG}\]

‘It is her flower.’ ‘It is her flower.’

The archaic character of the preterite in Modern Huastecan Nahuatl is equally if not more interesting. At the time of the arrival of the Spaniards, the preterite in Central Mexican Nahuatl was achieved through two processes. In the first process, verb roots had been undergoing final vowel reduction, and by the early sixteenth century there were four regular verb classes: three with reduced roots and one unreduced. In the second process, a suffix, the purpose of which perhaps was to identify tenses other than the present,\(^4\) was added to the verb root. The earliest form of this suffix was -ca [-ka:], and in the same way as the possessive suffix described above, it underwent vowel raising in unprotected word final environments. Then as today in all

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\(^3\) Long vowels are shortened in word final position.

\(^4\) Different forms of this suffix are employed in the construction of the preterite, pluperfect, and future tenses, as well as the optative mode.
varieties, the plural of preterite verbs is -queh [-keh]. But in early sixteenth-century Central Nahuatl the suffix had been completely eliminated in all singular forms except for Class 1 verbs. In this case, the unreduced root final vowel permitted -ca to be reduced completely to -c [-k], and it has remained so in all modern varieties. The following is a Class 1 verb conjugated in the preterite with a singular subject, illustrating the reduction of the non-present suffix to -c. The example could be taken from a colonial manuscript or from everyday speech in any modern variety of Nahuatl.

(17)  

All temporal and regional variants  
CLASS 1

titechittac /titetʃitak/  
ti-tech-itta-c-Ø  
SBJ.2SG-OBJ.1PL-see-NPRES-SG  
‘You saw us.’

Modern Huastecan Nahuatl, on the other hand, has preserved a singular form of the suffix as -qui [-ki] in Classes 2 and 4. The same suffix is also attested in colonial-period documents from Tlaxcala in Central Mexico. The following examples illustrate again how the process of vowel raising and loss, this time in the case of the non-present suffix associated with the preterite, had progressed further almost five hundred years ago in Central Mexican Nahuatl than it has today in Modern Huastecan Nahuatl.

(18)  

Classical Nahuatl (mid-sixteenth century)  
Modern Huastecan Nahuatl

CLASS 2

ticcouh /tikkoh/  
ticcouhqui /tihkohki/  
ti-c-couh-[Ø]-Ø  
ti-c-couh-qui-Ø  
SBJ.2SG-OBJ.3SG-buy-[NPRES]-SG  
SBJ.2SG-OBJ.3SG-buy-NPRES-SG  
‘You bought it.’  
‘You bought it.’  
CLASS 4

5 The original suffix -ca has been reduced to -que, followed by the plural suffix -h.
And what is particularly fascinating is that Class 3 verbs in this variant are in a state of transition between employment and elimination of the suffix, so its use is optional.

(19)

Classical Nahuatl (mid sixteenth century)  Modern Huastecan Nahuatl

<table>
<thead>
<tr>
<th>Verbal Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>nechcuah /netʃkʷah/</td>
<td>Ø-nech-cuah-[Ø]-Ø</td>
</tr>
<tr>
<td>SBJ.3SG-OBJ.1SG-bite-[NPRES]-SG</td>
<td>‘It bit me.’</td>
</tr>
<tr>
<td>nechcuahqui /netʃkʷahki/</td>
<td>Ø-nech-cuah-qui-Ø</td>
</tr>
<tr>
<td>SBJ.3SG-OBJ.1SG-bite-NPRES-SG</td>
<td>‘It bit me.’</td>
</tr>
</tbody>
</table>

It should be clear that the variants of Nahuatl have not evolved in a linear, monolithic fashion. However, as a whole they have developed and continue to develop, albeit at different rates, according to parameters established by the language’s inherent structure, one aspect of which is the process of vowel raising and loss. Contact with Spanish should not be considered a negative factor leading to the deterioration and impoverishment of Nahuatl; rather it should be viewed as a complex case of cross-cultural contact, providing the indigenous language, through the incorporation of vocabulary and grammatical structures, with new communicative possibilities. It did not provoke a rupture in the internal, continuous evolution of the varieties of Nahuatl. Both of these facts should constitute important arguments in constructing positive language attitudes today.

2.3  Levels and factors of endangerment
The available classifications and assessments regarding the level of endangerment of Nahuatl are too optimistic, and reliable data are lacking. For example, the Ethnologue’s (Lewis et al. 2014) classifications need updating and verification because they do not reflect the sudden decrease in language use that has occurred within the last two decades. Thus modern varieties of Nahuatl are classified between “developing” (level 5), assuming that the language is “in vigorous use” and there is a standardized form of literature used by some of the speakers, through “vigorous” level 6a, implying that it is used by all generations and in face-to-face communication, and “threatened” level 6b, referring to a dwindling number of native speakers, even if they belong to all generations. Only a few communities in the State of Mexico and in Guerrero are classified as “shifting” level 7, which means that there are middle-aged adults still using the language, but intergenerational transmission is lacking. In fact, only this level of endangerment (level 7) corresponds to the current situation of numerous Nahuatl-speaking communities across Mexico, where the speaker base is constantly shrinking.

Except for a limited number of communities, where intergenerational transmission is intact but subject to widespread bilingualism and an entirely Spanish school system, the large number of passive speakers in the generations under 40-50 years old threatens to totally disrupt language transmission. This situation prevails today in the Nahua world. Accordingly, depending on a specific community where Nahuatl is still spoken, the status of the language should be described either as ‘disappearing’ (Grenoble and Whaley 2006:18), that is, showing a strong shift towards Spanish and an overall decrease in the proportion of intergenerational transfer; ‘moribund’, with no transmission to children; or ‘nearly extinct,’ with only a few speakers of the oldest generation remaining. In fact, many members of native communities can be classified as “ghost speakers” (Grinevald and Bert 2011:51), who conspicuously deny any knowledge of Nahuatl in spite of evidence that they do have some level of competence. This happens both inside the community space and in the eyes of outsiders, attesting to negative attitudes toward the language and the refusal of community members to identify themselves as speakers of Nahuatl.

The single most crucial factor contributing to language loss is the decrease or disruption in intergenerational language transmission inside Nahua communities. This widespread phenomenon is strengthened by a lack of adequate educational support and adverse language ideology. Another essential factor contributing to increasing endangerment is the fact that materials for language education and literacy are scarce or non-existing. There is no widely accessible or commonly used literature in Nahuatl today. Likewise, no monolingual reference materials exist and written resources are limited to textbooks for the basic level school system. This situation becomes even more problematic due to the lack of consensus regarding standardized orthography. To make things even worse, it should be borne in mind that instruction in Nahuatl and its teaching materials form part of a school system geared toward an overall shift to Spanish. Different sources of pressure, including all forms of discrimination and negative ideology have caused parents to cease speaking their native language, and thus destabilize the

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6 For example, San Miguel Canoa and San Isidro de Buensuceso; Santa María Zoyatla in the municipality of Tepeojuma, all in the state of Puebla.
linguistic environment at home. And in those communities where the youngest speakers are middle-aged or belong to the generation of grandparents, parents cannot teach the language to their children. In addition, as a consequence of patterns established already in the nineteenth century, more and more Nahua communities today are becoming reduced islands of speakers, with different degrees of transmission.

It is clear that all essential criteria of endangerment (Brenzinger 2007:ix) are met by today’s varieties of the language: the low percentage and proportion of speakers within a population, the varying and quickly diminishing extent of language transmission, the loss of functions in language use and its failure to expand to new domains of modern life and media, as well as the profusion of adverse language attitudes, strengthened by tendencies in scholarly research and education that fail to recognize essential continuities between older and modern Nahua language and culture.

2.4 Educational challenges

In 2003 a federal law was created in order to protect the linguistic rights of Mexican indigenous people; simultaneously, federal education legislation was modified, guaranteeing, at least in theory, access to basic education in indigenous languages.\(^7\) At the same time, the National Institute of Indigenous Languages (INALI) was founded as a state institution charged with overseeing the implementation of the law, within a context of national governmental decentralization. Its primary function was to promote and coordinate the establishment of indigenous language institutes as well as legislation, and most importantly, statutes providing means of enforcement of this legislation at the level of the individual states.\(^8\) However, there are still serious impediments to the implementation and execution of laws relating to linguistic rights, given that the perpetuation of colonial attitudes is common among law-makers (Zimmermann 2011:22-23). In addition, INALI has not undertaken or sponsored concrete programs of massive language revitalization and it has been silent in regard to many key issues, thus contributing to the ongoing discrimination of indigenous languages. For example, the prevailing majority of native people still do not have access to basic education in their native tongue, whereas the implementation of national standardized testing (ENLACE\(^9\) and EXANI/EGEL\(^10\)) clearly discriminates against non-native speakers of Spanish.

In 1964 the first generation of bilingual educators was recruited by the federal Secretary of Public Education for the purpose of assuring that indigenous school children gain literacy in

\(^7\) Ley general de derechos lingüísticos de los pueblos indígenas (http://www.diputados.gob.mx/LeyesBiblio/pdf/257.pdf)
\(^8\) To date INALI has carried out linguistic research and published a national catalogue of languages; it has produced numerous works in and on indigenous languages, including multiple translations of the Mexican constitution and other governmental documents; it has created norms for the preparation and licensing of translators and interpreters; and it has provided limited legal advise in individual cases of linguistic discrimination.
\(^9\) http://www.enlace.sep.gob.mx
\(^10\) http://www.ceneval.edu.mx
Spanish. Since that moment, Hispanization has been an “unquestionable imperative” in indigenous education (Flores Farfán 1999:37). Mexican bilingual education grew after its creation and continues to expand to this day, contributing to the massive replacement of indigenous languages with Spanish. And, paradoxically, only a portion of Nahuatl-speaking communities have access to this form of ‘bilingual’ education and many are subject to an entirely Spanish school program. Elementary education is highly centralized, with materials and curricula produced almost exclusively by the federal Secretary of Education and are entirely based on the Spanish model of language learning. Individual teachers do not participate in innovating curriculum development, but are trained as technicians who implement ready-made materials. Bilingual teachers are trained, for the most part, in Spanish, and are thus unable either to teach in a native language, or to explore and apply a native perspective and concepts in the educational process. They are entirely unprepared to creatively use language terminology developed from inside a native language, without merely calquing Spanish concepts. Their preparation process does not offer them solid linguistic and philological grounds either. Textbooks are only produced for a limited number of language varieties, whereas bilingual teachers are routinely given jobs in communities that speak variants and even languages different from their own. It is also not uncommon for children to be encouraged to stop speaking their native language at school; they are discriminated against by Spanish-speaking schoolmates with the consent of teachers, who even advise parents to speak only Spanish to their children.

The current situation of native-speaking children in Mexico and their Spanish-language proficiency closely parallels that of Native American children in the United States, who are likely to be stigmatized as “limited English proficient.” In some communities in the United States this challenge has motivated bold new strategies for indigenous schooling that emphasize immersion in the heritage language and community-based planning (McCarty 2003:147-158). Immersion schools started to develop in the 1980s, based on the principle that English as the dominant language should only be taught in school as a foreign language (Hinton 2011:298). This approach has been virtually unknown and absent in Mexico. Although nidos de lengua ‘language nests’ were established in Mexico, especially Oaxaca, beginning in 2008, with at least ten language nests in existence by late 2009, serving the Mixtec, Zapotec, and Cuicatec languages (Meyer and Soberanes Bojórquez 2009), their small scale and limited distribution cannot meet growing challenges. Indeed, an immersion program could be implemented in Nahuatl-speaking communities, using the model of pre-school language nests, in which the fluent speaking grandparent generation, often the last fully proficient generation of native speakers, would take care of young children using only the indigenous language.

While adverse language attitudes prevail at the community level, many covert forms of discrimination take place when the students enter junior high, high school, and college. During the presidency of Vicente Fox (2000-2006) the federal government abandoned an attempt considered earlier to create spaces for indigenous education in the public universities. Instead, a new system of intercultural universities was established. Nevertheless, most of these underfunded institutions do no more than offer traditional careers in Spanish to a largely
indigenous student population. Curiously absent at all Mexican universities, including the Universidad Nacional Autónoma de México with its flagship program, “Mexico Nación Multicultural”,¹¹ is the basic mode of activity with which these institutions could trigger a national movement of indigenous linguistic and cultural revitalization: a large-scale practice of curriculum development, teaching, and research done entirely within an indigenous language.

3 Our methodological proposal for research, teaching and revitalization

For almost five hundred years now, knowledge related to all aspects of indigenous cultures has been produced by Western scholars who extract data using Western methodology from human and non-human indigenous sources, interpret the data using Western theoretical models, and publish the results of their work in non-indigenous languages. Unless we start from the premises that indigenous language and culture are incapable of generating unique methodology and theory and that indigenous people are incapable of conducting research, the only explanation for the exclusion of indigenous people and their perspective from Western academia must be ideological. We have begun a long-term experiment designed to see if research could be conducted in a different way; conducted by indigenous people on and from within their own language and culture, and in collaboration with, rather than subordinated to Western researchers. In essence we are proposing a major change in studying Nahua language and culture, educating indigenous people in Mexico and undertaking collaborative language revitalization activities.

3.1 Research methodology

Instituto de Docencia e Investigación Etnológica de Zacatecas (IDIEZ) and the University of Warsaw’s Faculty of “Artes Liberales” have been working with Nahua immigrants from the Huasteca region who are studying at the Universidad Autónoma de Zacatecas and more recently also with native speakers from Puebla and Tlaxcala. Offering an alternative to the general function of the Mexican university as the last step in the educational process of Hispanicization, these students are provided with different opportunities, which allow them to continue practicing and developing their language and culture; parallel to the careers they study at the university, they are trained to teach Nahuatl and they actively collaborate with international academics in many types of research projects. Traditionally, Western ethnographic researchers have incorporated native speakers of indigenous languages into their work as informants whose role in the research process is limited to the passive transfer of raw linguistic data. A firm boundary is usually drawn between the informant (conceived of as a possessor of native cultural knowledge) and the anthropologist (the only participant capable of understanding and interpreting this knowledge at an academic level). We deconstruct this boundary by assigning active roles to students and researchers who are members of the communities under investigation. These roles embrace field research, the analysis of ethnolinguistic data, ethnohistorical and linguistic studies.

as well as teaching activities. Thus, in our approach we do not “read over the shoulders” of the natives (Geertz 1973:452), but strive to combine inside and outside perspectives in ways that are new to existing scholarship.

Indigenous students in collaboration with members of native communities and non-indigenous researchers carry out fieldwork, transcribe, translate and analyze materials they have collected and use them both in their individual research activities and in broader team projects. These include a European Research Council funded project, “Europe and America in Contact,” carried out by the University of Warsaw, IDIEZ, and the University of Seville, focusing on long-term cross-cultural transfer and contact-induced change in Nahuatl, and Stephanie Wood’s NEH funded project, “An Online Nahuatl Lexical Database: Bridging Past, Present, and Future Speakers.” During our summer courses for non-native speakers we began requiring students to bring a research project with them to the course, and then we paired them with our indigenous instructors for an hour per day in order to work on these projects. The students were encouraged to explain to the instructor how they had set up their project and then work on it collaboratively during the summer. The results were unexpected. A high percentage of the students continued to work on their thesis, dissertation, and book projects with their instructor for a long period of time after the course concluded. Some even solicited grants for this purpose. Today, the indigenous members of IDIEZ who are working on their master’s theses within the ERC-funded project continue to collaborate with current and former foreign students studying similar topics.

3.2 Our approach to teaching

Research is consistent in its findings that high level academic achievement is best attained when children are educated in their native language, and that the worst thing a society can do regarding the preparation of its future thinkers is to immerse students in a second, in this case, dominant language with no linguistic support (Austin and Sallabank 2010:10). And yet, this is how Mexico educates its indigenous population. Children progress through the educational system believing that their language and culture constitute a hindrance to their own personal advancement; but at the same time, they receive none of the second-language assistance that would allow them to fully participate in the Spanish language curriculum. Add to this the fact that Mexican culture does not value or teach critical and creative thinking in general, and the result is marginal participation of indigenous people in all levels and areas of academic life.

In response to this, IDIEZ has created a monolingual space, where indigenous students at the Universidad Autónoma de Zacatecas can continue to use their language and practice their culture, through participation in the teaching, research, and revitalization projects we design and implement. An indigenous college student has resigned him or herself to the fact that their language has no place in academia, so the first thing this student must do after entering IDIEZ is to start thinking conceptually in their language. This is achieved when the student begins to participate in the production of our monolingual dictionary of Modern Huastecan Nahuatl. Crafting definitions for words is a standard reasoning exercise used in many educational
curricula for native-speakers. Our students have never done this, and much less in their own language. Many experience headaches during the first few weeks, and all resort to a very interesting strategy for pondering the content and wording of the definitions: instead of using abstract reasoning, they transport themselves mentally back into their village and imagine how a concept might be verbalized among real people. To date, students at IDIEZ have produced monolingual definitions and example sentences for almost nine thousand headwords.

The Mexican educational system treats indigenous civilization as a relic of the past and only includes superficial aspects of it in the national curriculum. Many Nahuatl-speaking students are not even aware of the fact that their ancestors produced the largest corpus of indigenous language writing in America. We believe that a person cannot be considered well educated, or even have a sense of historical identity, without studying his or her cultural legacy. Some protest, affirming that Classical Nahuatl is a dead language that cannot be understood by today’s speakers of modern dialects. In January of 2014 in our Nahuatl Language and Codex Institute, held in the city of Cholula, we brought together foreign and Mexican researchers and students and a group of Nahuatl-speaking high school students from the town of Zoyatla, Puebla, and other native speakers from the region. The indigenous participants had gone through their basic education entirely in Spanish, and had never read anything written in their own language. For two weeks, we transcribed, translated, analyzed, and discussed together a number of colonial manuscripts, written in Nahuatl, the earliest being a mid-sixteenth century manuscript with pictorial and glyphic components from Chalco Amaquemecan, followed by seventeenth- and eighteenth-century mundane documents from the Cholula region. The students had no trouble reading and understanding the manuscripts. One of the sessions was held in Zoyatla and was attended both by school children and adult members of the community. The course also included the reading of colonial pictorial manuscripts and instruction in modern Nahuatl.

The study of the past is important for practical reasons. We have been able to identify vocabulary, concepts, and even grammatical structures from colonial Nahuatl that have fallen out of use and that can be reintroduced into today’s variants. For example, we were able to identify the word *copactli* ‘soft palate’ from Molina’s (2001 [1571]) dictionary and incorporate it into our monolingual dictionary definitions of phonological processes. But the study of the past is also more generally important because it makes indigenous students aware of the fundamental relationship of continuity between them and their ancestors, effectively empowering them to participate more critically and productively in their daily lives. The Nahuas must have access to their past if they are to actively promote the survival and development of their culture.

Our next step in developing and institutionalizing our strategies will be to found a monolingual master’s degree program in Nahuatl Studies at the Universidad Autónoma de Zacatecas in Mexico, with international support. We expect the majority of the students to be native speaking bilingual elementary education teachers, who will gain the background in the theory and methodology of second language instruction and learning processes that they will need in order to design and implement teaching and revitalization activities in their communities. However, we also plan to include non-indigenous academics from Mexico and other countries.
who wish to teach, conduct research, and participate in revitalization projects.

### 3.3 Creating reference works and terminology

We have started the preparation of monolingual reference materials with the monolingual dictionary of Modern Huastecan Nahuatl, but we are also preparing a monolingual grammar, a thesaurus, and research works (theses) written entirely in Nahuatl by indigenous students themselves. We believe that monolingual reference works constitute a key component for the infrastructure needed for any kind of research and teaching directly related to an indigenous language and culture. This implies the creation of a huge amount of new technical and theoretical vocabulary. No monolingual grammatical terminology for Nahuatl existed before we began working on our dictionary. But we did not want to simply generate translations of the concepts used to describe European languages. Rather we produce neologisms from within Nahuatl. An example is our word for the lexical category which roughly corresponds to “noun.” A Nahuatl noun does not resemble its counterpart in English or Spanish. It is not simply a label for a person, place, or thing. The simplest form of a Nahuatl noun has three morphemes: a subject prefix, a root, and a number suffix for non-possessed nouns. For example:

(20) \textit{nicihuatl/nisiwatl/}

\textit{ni-cihua-tl}

SBJ.1SG-woman-ABS.SG

‘I am a woman.’

So, a Nahuatl noun is actually a complete sentence, the function of which is to provide a subject with a name. \textit{Tlatocaxtia}, in Modern Huastecan Nahuatl means ‘to provide somebody or something with a name’. This is composed of \textit{tla-}, the non-specific non-human object; \textit{tocax}, a combining form of \textit{tocaitl}, “name”; \textit{-ti}, a verbing suffix, meaning “to have [the incorporated noun]; and the causative suffix, \textit{-a}. \textit{Tlatocaxtia}, literally ‘to cause something to have a name’, can then be transformed into an active-action noun by adding the suffix \textit{-litzli}, producing \textit{tlatocaxtilitzli} ‘the act or process of naming something’. This is the neologism we have created to denote Nahuatl nouns. And we have produced extensive new terminology that permits us to describe the lexical category and the morphological structure of our dictionary’s headwords, as well as the phonological processes involved in the articulation of the phonemes and allophones associated with specific letters.

This kind of thinking from within indigenous languages must filter back into secondary and primary education, if indigenous people are to reach their full potential and be able to enrich society with the unique creative perspective their language and culture offer. All of these students will experience first hand the possibilities that emerge in an environment where native speakers of Nahuatl conduct teaching and research from within the unique perspective of their own language and culture, and collaborate with their peers from other cultures. The graduates will be able to take the model back to their home institutions, where they can adapt and develop it
according to their particular contexts and goals.

4  Standardizing orthography and restoring literacy

4.1  Colonial Nahuatl orthography

The pre-Hispanic tradition of books and glyphic records helped the Nahuas to quickly adopt alphabetic writing and use it prolifically. The rapid development of the Nahua writing tradition was made possible by adapting the orthographic conventions of the Roman alphabet in the 1530s in such major centers as Mexico-Tenochtitlan and Tlatelolco. Friars, who were not only interested in the production of doctrinal materials in native languages, but who also started to teach the local nobility to write in their own language in such important educational centers as the Colegio de Santa Cruz in Tlatelolco, were crucial agents in this process. And once the first generation of indigenous scribes and notaries had begun working, the participation of the Catholic Church in the training process lost importance because qualified indigenous persons in each town took over the task of preparing their successors. By the third quarter of the sixteenth century the number of nobles capable of writing in the new mode was constantly growing. By that time even small towns had a notary associated with the municipal government, while many such figures were busy producing textual records in larger and more populous towns, providing service to the municipal government and individuals (Lockhart 1992:330-331). Beginning in the 1540s various kinds of writing in Nahuatl expanded quickly across the core area of Nahua culture and beyond, and served as a kind of “alphabetic bridge” with other ethnic groups whose written records developed later, but were never so widely acknowledged by Spaniards as documents composed in Nahuatl.

The creation and development of Nahuatl orthography was a task undertaken simultaneously by several friars and their indigenous assistants. It was based on the Spanish values of the Roman alphabet representing similar sounds in Nahuatl, a process which was facilitated by the fact that Spanish had close equivalents for the majority of phonetic elements in the native language. In fact it was Nahuatl that lacked more of the Peninsular sounds. Several phonological features of Nahuatl nevertheless posed a serious challenge, including the glottal stop/fricative and vowel length, which were usually left unmarked, as well as voiceless glottal fricatives. Other non-compatible elements were coped with quite well. The native sounds [tl] and [ts] were rendered as digraphs, while the double l, lacking in Spanish then, was modeled on the Latin ll. Early orthographers also became aware of the fact that in Nahuatl voiced consonants are voiceless at the end of a syllable, so they changed prevocalic hu- [w] to -uh in syllable-final positions, doing the same with -uc and -cuh for the sound [kʰ]. This system, first developed by the ecclesiastics, was immediately reshaped by native scribes and authors, whose primary concern—differing from the European priority given to standardized, conventional forms—was to reproduce not only orality, but also phonetic features that could change as a result of phonetic interaction with the sounds of neighboring words. Unlike for Spaniards, the word as such was
neither an important nor easily recognizable entity for the Nahuas, who tended to record sounds in an ongoing string of letters (Lockhart 1992:336-339). Thus, an innovation introduced by indigenous writers was to use the alphabet to reproduce pronunciation, not established spellings for every word, while the rendering of a given word or syntactic unit could change because of neighboring words. This native adaptation and the relative flexibility in the use of orthographic conventions does not disappear over time and never gives way to full standardization.

Although there were further attempts at standardization undertaken by such Europeans as Horacio Carochi, who published his outstanding *Gramática de la Lengua Mexicana* in 1645\(^1\), these had little impact on the traditions of literacy and ways of writing in native communities. As we move toward Stage 3 of contact-induced change according to Lockhart (cf. section 2.1), in the late seventeenth and through the eighteenth centuries, the orthography in indigenous writing became more regionalized, reflecting local, unstandardized variants of spelling (Lockhart 1991:122-134; Pizzigoni 2007:35-39). Local and regional differences thus come to surface in the written language, and, to a certain degree, in the native handling of orthography. Thus, we have for example z for tz, like *tetazin* instead of *tetatzin* and *hespiritu* instead of *espiritu* in a 1739 will from Ixtenco, Tlaxcala, or *quimotillisquen* for *quimoittilizqueh* in a 1766 will from the same locality. Further destandardization of Nahuatl orthography toward the end of the colonial period is best explained not as a result of phonological evolution; rather, it should be attributed to the decreasing involvement of the native nobility who spoke a more standardized Nahuatl than the commoners and gradually switched to Spanish. The more localized Nahuatl spoken by the lower-ranking people became more dominant in written texts (Lockhart 1991:134).

### 4.2 Modern standardized orthography of Nahuatl: Our implementation

Revitalization will not be successful unless Nahuatl literacy is developed and extended through the general population, both as a means of expression and communication and as a vehicle for accessing the cultural legacy available in the Classical Nahuatl corpus. And this will only be possible with the help of a standardized orthography, which encompasses all variants across space and time. Unfortunately, at this time there are multiple orthographies in use and none, with one exception, have been standardized through the publication of rigorously edited works. Most of these systems are based on two principles. First they rest on the mistaken premise that the purpose of an alphabet is to represent phonemes and/or allophones.\(^1\) Second, they seek to distance themselves from Spanish orthography, substituting s [s] for Spanish c and z, and substituting k [k] for Spanish c and qu, for example. Both of these foundations have disastrous consequences. On the one hand, we know that pronunciation differs greatly between variants, 

\(^{12}\) Carochi proposed the use of a system of diacritics to represent vocalic length and the glottal stop; nevertheless, and as a rule, indigenous writers never considered the representation of these two language characteristics important.

\(^{13}\) As Lüpke correctly pointed out, “It is widely assumed by linguists that the basis of the ideal orthography is phonemic. If this was the case, the main difference between a phonemic transcription and an orthography would be the inventory of symbols used” (2011:331).
and often between villages in a single region, so it is obvious that an alphabet based on the representation of sounds will not facilitate communication. On the other hand, the presence of non-Spanish elements, the inclusion of which in the orthographies is justified by most people as a political statement, hampers reading by young children, who must learn separate spelling systems for Spanish and Nahuatl, and also makes it difficult to read texts in Classical Nahuatl, which are written in Spanish orthography.

There is another, less widely used tendency, which can be termed “enriched traditional orthography,” and is based on colonial Nahuatl writing. The Asociación de Escritores Indígenas, A.C., uses Alonso de Molina’s mid-sixteenth century dictionary (Molina 2001 [1571]) as its model. And the ACK traditional enriched orthography, named after the key researchers who have contributed to its standardization, i.e., Richard J. Andrews, R. Joe Campbell, and Frances Karttunen (Andrews 1975; Campbell and Karttunen 1989; Karttunen 1983), is based on Horacio Carocho’s mid-seventeenth century grammar (Carocho 2001 [1645]).

We have chosen to use the ACK system in our project to standardize Nahuatl orthography across all modern varieties and colonial texts for three reasons. First, it is based on colonial orthography, with minor modifications: the glottal aspiration [h], which was seldom represented in colonial writing, is written as h; vowel length, again seldom represented in colonial times, can be signaled with a macron over a long vowel, i.e., ā [aː]; the colonial ç [s] before [a] and [o] is replaced by z; and the syllable and word final devoiced variants of hu [w] and cu [kʷ] are written uh [ʍ], h] and uc [kʷ, h]. This is all important for making colonial texts accessible to modern readers. Second, rather than representing sounds, it emphasizes the morphology that is shared by all varieties of Nahuatl. An orthography that makes this characteristic of the language apparent to its readers will have two benefits: it will facilitate interdialectal communication and it will permit both native and non-native students to intuitively and conceptually understand how the language works. Third, the ACK system is, in fact, the only orthography of Nahuatl that has ever been rigorously implemented in a large corpus of the language.

We plan to carry out a universal standardization of Nahuatl by applying the ACK system to all modern variants of Nahuatl and to a large number of colonial texts, and publish the resulting works through our monolingual editorial series. What will this entail? Standardizing the orthography of Nahuatl is a complicated task, which is not understood by the two Mexican institutions that will be instrumental in divulging it to the general population, the aforementioned INALI and the Federal Secretary of Education’s Department of Indigenous Educations (DGEI), both of which advocate sound-based orthographies. The DGEI recently announced that it had achieved a “consensus” in indigenous groups and communities regarding the letters to be used in the Nahuatl alphabet. And INALI has adopted a populist strategy consisting in having representatives of indigenous groups and communities vote on which letters to use, but insisting

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14 Some of the members of the Asociación de Escritores Indígenas, A.C. include Librado Silva, Francisco Morales and Natalio Hernández, all of which are participants in the Seminario de Cultura Náhuatl that Miguel León Portilla has directed for over fifty years at the National Autonomous University of Mexico.

15 Dirección General de Educación Indígena.
that the chosen system is only a suggestion, and that everyone should be able to spell however they want. Both institutions believe that they have now completed the standardization of Nahuatl orthography.

The process is actually much more complex than this. We began with an understanding of how the creators of the ACK system used a set of letters to write a large corpus of words from colonial Nahuatl. However, our initial task was to employ this system in order to write a monolingual dictionary of Modern Huastecan Nahuatl, that would include entries with a headword, grammatical and verb class categories, Molina’s prefix clues, definitions, example sentences, morphological analysis as well as derivations, including preterite, causative, and applicative forms for verbs; plural and possessive for nouns; as well as impersonal, reduplicative, and combining forms for verbs, nouns, and relationals. One thing is to decide how to spell a headword. Another thing is to make and codify decisions regarding how to spell all of its variants and conjugations, identify morphemes, and represent them transparently without departing so far from the letter-sound relationship that a native speaker will not be able to associate the word with its referent.

As an example of these kinds of decisions, we can examine the following letters of the ACK Nahuatl alphabet with their corresponding phonemes: h [h], c/qu [k], t [t], cu [kʷ], hu [w], and n [n]. In a syllable initial position, each letter represents its assigned phoneme:

\[(21)\]

<table>
<thead>
<tr>
<th>Letter</th>
<th>Word</th>
<th>Phoneme</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>h</td>
<td>ehecatl</td>
<td>/ehekatl/</td>
<td>“wind”</td>
</tr>
<tr>
<td>c/qu</td>
<td>caqui</td>
<td>/kaki/</td>
<td>“to hear something”</td>
</tr>
<tr>
<td>t</td>
<td>mati</td>
<td>/mati/</td>
<td>“to know something”</td>
</tr>
<tr>
<td>cu</td>
<td>tzacua</td>
<td>/tsakʷa/</td>
<td>“to close something”</td>
</tr>
<tr>
<td>hu</td>
<td>cahua</td>
<td>/kawa/</td>
<td>“to leave something”</td>
</tr>
<tr>
<td>n</td>
<td>niman</td>
<td>/niman/</td>
<td>“then, immediately”</td>
</tr>
</tbody>
</table>

However, in some syllable-final, word-internal positions, the first five sounds can undergo changes and will all be pronounced as the voiceless glottal fricative [h].

\[(22)\]

<table>
<thead>
<tr>
<th>Letter</th>
<th>Word</th>
<th>Phoneme</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>h</td>
<td>pahthli</td>
<td>/pahthli/</td>
<td>“medicine”</td>
</tr>
<tr>
<td>c/qu</td>
<td>cacqui</td>
<td>/kahki/</td>
<td>“to hear something” (preterite)</td>
</tr>
<tr>
<td>t</td>
<td>mattoc</td>
<td>/mahtok/</td>
<td>“to know something” (present perfect)</td>
</tr>
<tr>
<td>cu</td>
<td>tzauquei</td>
<td>/tsahki/</td>
<td>“to close” (preterite)</td>
</tr>
<tr>
<td>hu</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

16 Spelling convention adopted in the sixteenth century.
cauhqui  /kahki/  “to leave something (preterite)”

And in the word-final position, h, and hu are pronounced as a very soft version of the voiceless glottal fricative [h], and n is devoiced [n̥], producing a sound almost indistinguishable from the voiceless glottal fricative:

(23)

h is softened:

maltih  /maltih/  “to bathe” (preterite)

uh is devoiced and loses is rounding, and is respelled uh:

noconeuh  /nokoneh/  “my child”

n is devoiced

xiyacan  /ʃijakaŋ/  “Leave (you, pl.)!”

In the preceding examples we have eight distinct elements that can represent or approximate a single sound. We spell them in a way that allows the reader to identify morphemes and their characteristics:

pa\- is the morpheme for “medicine”;

cac-, mat-, tzauc-, cauh- and maltih- are reduced stems of the verbs caqui, mati, tzaucua, cahua and maltia;\(^{18}\) the -uh of -coneuh is the singular nominal possessive suffix, and the -n of xiyacan is the plural marker of the imperative.

Sound-based orthographic systems, such as those used by the INALI and the DGEI, write all of these sounds, sometimes including even the devoiced syllable- or word-final l [ɬ], using the letter j, because it represents the voiceless glottal fricative in Spanish. The word final h, uh and n are frequently not represented at all.

(24)

| “wind”       | /ehekatl/ | ehecatl  | ejekatl  |
| “medicine”   | /pahtli/  | pahtli   | paji\-li |
| “to hear”    | /kaki/    | caqui    | kaki     |
| “heard”      | /kahki/   | cacqui   | kajki    |
| “to know”    | /mati/    | mati     | mati     |
| “has known”  | /mahtok/  | mattoc   | majtok   |
| “to close”   | /tsakʷa/  | tzaucua  | tsakwa   |
| “closed”     | /tza\-h\-i/ | tzaucqui | tsajki   |
| “to leave”   | /kawa/    | cahua    | kawa     |
| “left”       | /kahhi/   | cauhqui  | kajki    |
| “bathed”     | /maltih/  | maltih   | maltij   |
| “my child”   | /nokoneh/ | noconeuh | nokonej  |
| “Leave!”     | /ʃijakaŋ/ | Xiyacan. | Xiyakaj. |
| “to tell somebody” | /i\-lia/ | ill\-ia | ili\-a |

\(^{17}\) Spelling convention adopted in the sixteenth century.

\(^{18}\) The final -a of maltia was historically -ta. When the verb stem is reduced, the t reappears and softens to h.
There is nothing more conducive to revitalization than promoting communication. A standardized orthography is key to this task, and it should be crafted with this in mind. It should highlight the aspects of a language shared by all of its varieties in order to promote contact between their speakers. In the case of Nahuatl, this aspect is its morphology. It should allow people to read, write about and discuss together their cultural legacy. And it should, if possible, serve as a transparent window into the structure of the language. The ACK Nahuatl orthography carries out these functions, and we will use it to publish and circulate works from all varieties of modern Nahuatl and colonial Nahuatl, thus promoting a new growth in literacy and contributing to the revitalization of the language.

4.3 Importance of Nahua literacy

As has already been emphasized, within the first two decades after the Spanish conquest the Nahuas started to use alphabetic writing for their own purposes, producing a corpus of literary and mundane texts that in terms of its size and heterogeneity remains unparalleled in native America. In many places this prolific tradition continued until the nineteenth century. Production tapered off after Mexican Independence and was not resumed in force until the 1970s. At this time we begin to see works of literature in poetry, narrative, theatre, and essay published in Nahuatl. Many of these writers, such as Natalio Hernández, emerged from the ranks of teachers who had become disillusioned with the national system of education. In spite of these initiatives, the restoration of Nahua literacy and its adaptation to modern genres, themes and media encounters serious obstacles today, above all, the lack of consensus regarding the orthography and the false propaganda regarding the mutual incomprehensibility of modern “dialects” of Nahuatl.

It is often emphasized, even in scholarly circles, that alphabetic writing is not an inherent element of tradition or practice in indigenous communities, but something imposed for historical and colonial reasons, an ethnocentric “reductionism” (Flores Farfán 2009:125). Indeed, at no time during this period of almost five hundred years has literacy or the practice of reading and producing literary works been widespread among the Nahua population; however, ethnohistorical research clearly shows that writing was an important and efficient tool not only in the hands of the indigenous nobility, but also among members of the middle and even lower classes, who used it for legal purposes. Besides, it permitted and triggered the conservation and perpetuation of historical tradition and collective memory, as attested by the widespread tradition of community-based annals and so-called “primordial titles” in the middle and late colonial period. Since its very beginning, alphabetic writing in Nahuatl was closely linked to indigenous orality, providing means to record oral genres in ways that were not available in pre-conquest glyphic writing. The tradition and its corpus is a fact, and we believe that unless it is reactivated, spread and developed, no attempt at revitalization will be successful.

Thus, even if we accept the view that the requirement of literacy stems from a bias on the part of the dominant/Western cultures of the world, there should be no doubt that “in order to
function in a globalized world one does need to be literate” (Grenoble and Whaley 2006:135). Today native communities should not be conceived of as traditional and isolated enclaves, because younger generations are active participants in “electronic culture” and media. Therefore, we should not consider that recipients of writing are limited to teachers and schoolchildren; rather, important target groups for indigenous writing are teenagers and young adults actively communicating with each other via the internet, and especially through social portals which form a major space for the “popular culture” of writing today. Each of our native-speaking students from Zoyatla, all high school teenagers, mentioned independently and with no elicitation from us, that the primary reason for their participation in the course was their desire to learn to write in Nahuatl. Thus, the introduction and propagation of writing should be oriented toward the development of functional communicative competence, but it should also take into account the sociolinguistic and cultural factors of a given community, as well as the need to gain local acceptance and support for this kind of initiative (Flores Farfán 2009:127).

Therefore local attempts to (re)create literary culture should be stimulated and fully supported by academic circles and within revitalization projects carried out in collaboration with native communities. This support must entail instruction in orthography, training in reading older and modern Nahuatl texts, encouraging critical reading and creative writing, providing skills needed for producing written/literary texts, as well as furnishing technical and editorial opportunities for publishing works produced by members of a specific community. Crucial for this enterprise is the unification of its orthography in close relationship to the older tradition of writing in Nahuatl. The standardized orthography we are implementing in our research, teaching and revitalization activities not only permits written communication across variants, but also emphasizes the continuity between older and modern Nahuatl language and culture. Therefore, we encourage indigenous people to create monolingual spaces in their communities and educational institutions in order to read and discuss works that their ancestors and contemporaries have written, as well as to create works of their own.

To carry out this goal we have launched a monolingual Totlahtol series, published through the University of Warsaw and IDIEZ in collaboration with institutions in Mexico and the USA, that will include older and contemporary written works, as well as reference materials, such as the monolingual dictionary of Modern Huastecan Nahuatl, in standardized orthography. Refugio Nava’s book of children’s literature, Malintzin ilahtol (2013), written in Tlaxcalan Nahuatl, and Gustavo Zapoteco Sideño’s volume of poetry, Chalchuhuicozcatl (2014), composed in Nahuatl from Guerrero, are the first works published in this series. Publishing historical sources and making them available not only for scholars but also for native speakers will be crucial for restoring and strengthening the historical identity of the Nahuas and for helping to raise the status of their language. All of these publications are prepared in paper versions—which we consider important for the prestige of written language, both in the eyes of speakers and their communities and in the academic world—and in open-access electronic publications assuring their unrestricted distribution among native speakers of all varieties, teachers, students, and scholars.
The success of Nahuatl revitalization efforts will depend to a large degree on the ability of native speakers from different regions of Mexico to communicate and collaborate with each other in the planning and implementation of projects for the development of their language and culture. The lack of contact between different isolated Nahua communities makes them even more vulnerable to rapid language shift (Flores Farfán 2002:229). However, international collaboration is also very much needed if indigenous people are to overcome the strong tendency toward Hispantization in Mexican society. Until recently, geographic distance and the differences between linguistic variants constituted what was considered an insurmountable barrier to the possibility of interregional communication. However, in December of 2011, as part of a research project funded by the US National Endowment for the Humanities,19 IDIEZ brought together twenty native speakers representing approximately ten variants of Nahuatl for a five-day workshop in Zacatecas. A second Interdialectal Encounter of Nahuatl, financed by the Mexican National Commission for the Development of Indigenous Peoples (CDI)20 and organized jointly by IDIEZ and the University of Warsaw, was held over the weekend of January 18 and 19 of 2014 in the city of Cholula with the participation of sixty native speakers and thirteen non-native speakers. Both events were recorded and broadcast by "XECARH The Voice of the Hñahñu People," a radio station affiliated with the CDI.

In our two Interdialectal Encounters, the topics of discussion were reviewed and ratified or modified by the indigenous participants at the beginning of each event, and all discussions were held monolingually in Nahuatl. As a rule, native speakers of indigenous languages communicate with each other in Spanish outside of their community. And if they must use their language in a public situation, they will immediately translate what they have said into Spanish. Not surprisingly, this behavior was replicated by some of the indigenous participants at the beginning of each Interdialectal Encounter, probably reinforced by the belief that speakers of different varieties of Nahuatl would not be able to understand each other. In fact, before the 2011 event it is probable that no one really knew if interdialectal communication would be possible. In both events, however, it immediately became apparent that a high enough degree of intelligibility existed to permit fluid and animated monolingual discussions on a diverse array of topics, including identity, revitalization, rituals and local festivals, ways of greeting, education, immigration, grammatical terminology, linguistic policy, migration, intergenerational language transmission, gender issues and interculturality. Perhaps most important is the shift in attitude that occurs among the participants as the discussions progress and they are able to experience interdialectal communication for themselves. They unanimously agreed that more interdialectal

19 The project, An Online Nahuatl Lexical Database: Bridging Past, Present, and Future Speakers, was directed by the University of Oregon’s Dr. Stephanie Wood from 2009 to 2012. http://whp.uoregon.edu/dictionaries/nahuatl
20 www.cdi.gob.mx
encounters, and more diverse modalities of these activities, such as a research conference in Nahuatl, should be planned on a regular basis. At the end of the 2014 event, we opened a Facebook site and monitor subscription and participation in order to assure monolingual communication in Nahuatl.

We have also started to spearhead the formation of an international consortium of institutions of higher education to foment the teaching, research, and revitalization of Nahuatl language and culture. By promoting these strategies of inter-institutional cooperation, we make Nahuatl instruction available to anyone in the world who wishes it, acknowledging the importance of neo-speakers for research and revitalization projects. Indigenous students actively participate as researchers in long-term team projects carried out by the University of Warsaw and IDIEZ and financed by the European Research Council, the Foundation for Polish Science and the Polish Ministry of Science and Higher Education (National Programme for the Development of the Humanities); the long-standing colonial Nahuatl teaching program carried out in Warsaw since 2000, was enriched in 2012 by a course in modern Nahuatl taught by a native speaker, making it the only permanent full academic year Nahuatl program of its kind. We want to create even more opportunities for Western and indigenous researchers to participate in these kinds of collaborative projects. The aforementioned Cholula Winter 2014 Nahuatl and Codex Institute was a recent successful experiment of this kind that will now be continued on a yearly basis. Yet another complementary endeavor is our revitalization website dealing with three endangered languages: Nahuatl in Mexico and Lemko and Wymysiöeryś in Poland. Its three domains of research, culture (including literature) and education, describe, document, and recreate the universe of each of the endangered languages. And they are all presented in monolingual interfaces in each of the three endangered languages, plus English, Polish, and Spanish. The website has been designed, on the one hand, as a space available for writers in Nahuatl, Lemko, and Wymysiöeryś to publish their works, and on the other hand, as a resource repository for scholars and students working on those languages and their communities. Its target user groups include speakers of endangered languages, students, and scholars.

It is probably safe to say that there has never been a successful indigenous language revitalization project in Mexico. Racism is a structural aspect of Mexican society that is not recognized and addressed in the public forum: unhindered by criticism, it generates pervasive discrimination against indigenous people that cannot be countered by limited and isolated revitalization efforts. We believe that an international consortium of committed institutions and individuals can provide the independent funding, experience, creative theories and strategies, and prestige that may foster language revitalization projects and assure their success.

6 Conclusions and proposals for the future

Our proposal for the revitalization of Nahuatl requires fostering collaboration across academic, social, and ideological boundaries, as well as efficiently combining grassroots and top-
down approaches. It is necessary to bridge the gap between theory and practice in revitalization, i.e., between the study and planning of revitalization in academic circles and the implementation of concrete programs, be they community-based, educational, or the direct result of governmental language policy. The urgent need to combine different levels of activities in the revitalization of native languages of Latin America, including the pedagogical, public, and sociolinguistic spheres, has already been emphasized (Zimmermann 2011:34-36), but it is high time to put it into practice.

A fundamental part of our approach involves compiling extensive documentation of both a historical (archival texts) and an ethnolinguistic (field materials) nature. In our team projects we study and use these resources to create dictionaries, grammars, and pedagogical materials, adapting the products of linguistic research for use in revitalization. Lexical and structural data from historical documentation can be reintroduced into modern language in order to enrich the linguistic tools available to native speakers. We also aim to strengthen the historical and cultural identity of native speakers by facilitating their access to the texts written by their ancestors through the colonial era and making research results more available to native researchers and other members of speech communities. An important objective of our research is to document and analyze the degree of continuity between older and modern Nahuatl as well as reconstruct the last five centuries of evolution of Nahua language and culture. Disseminating this knowledge may help to construct positive language attitudes among native speakers and in Mexican society as a whole.

Education has an important place in our activities and is linked to our research and publication projects. It is extremely necessary to stimulate the teaching of Nahuatl at all academic levels; researchers and native speakers should collaborate in creating innovative and efficient resources for instruction. Therefore, we plan to establish a monolingual university program grounded in international collaboration, and strive for efficient collaboration with state educational institutions in order to extend the presence of native languages in primary and secondary education and improve teaching methodology. Crucial to the fortification and development of Nahuatl education and literacy is the implementation of the standardized orthography and the preservation of the richness of varietal differences.

Our approach involves direct collaboration with members of the language communities we are studying and working to revitalize. A fundamental aspect of our methodology involves transforming the traditional academic division between the ethnographer and the language community under study: native speakers can be trained to do research and they can collaborate on projects with non-indigenous researchers. This will not only empower native speakers, but will enrich ethnographic research with the addition of the insider perspective it has always lacked. Thus, native speakers work with us as students and researchers, not informants. They are provided with training to stimulate their successful and active involvement in educational, social, and political tasks essential for guaranteeing the survival and development of their language and culture. Native-speakers are also encouraged to creatively develop and extend the use of their language into more and more sectors of modern life, especially through the creation and
expansion of spaces for monolingual language practice.

All these goals are closely linked to and depend on the construction of positive language attitudes. It is indispensable for building the self-confidence of native speakers, strengthening their historical and cultural identity, and enhancing their professional performance. An essential aspect of this endeavor is the revival and extension of the culture of Nahua literacy developed during the colonial period by disseminating standardized orthography and implementing it across varieties; promoting everyday, literary and academic writing in Nahua; editing and publishing contemporary and older texts in standardized orthography, circulating them and encouraging people to read and discuss them. The isolation of Nahua communities and the lack of interregional communication can be overcome by holding interdialectal encounters, both in person and using videoconference technology, and by promoting monolingual communication in indigenous languages in the social media.

Finally, we need to tear down the existing ideological barriers to revitalization by widely disseminating the results of research showing the clear and irrefutable benefits that multilingualism offers to all of society. The revitalization of Nahuatl and other languages should not be seen as an aim in itself. The processes of globalization and homogenization are strengthened by the still pervasive worldwide belief that the establishment of a national language and culture is a fundamental requirement for political stability. However, a society's intellectual and creative potential largely depends on the quantity, the quality, and especially, the diversity of the ideas it can cultivate; these in turn are strongly linked to cultural and linguistic diversity. The most recent results of psycholinguistic research demonstrate a strong correlation between multilingualism and enhanced non-verbal processes. It has been shown that bilingual and multilingual children and adults have expanded cognitive potential, which manifests itself in greater flexibility and capacity for task-solving and in generally higher intellectual and social skills (Bialystok 1999; 2001; Bialystok and Martin 2004; Bialystok and Senman 2004; Bialystok, Craik and Luk 2012; Costa, Hernández and Sebastián-Gallés 2008; Kovács 2009).

These findings seem to be backed up by direct outcomes of revitalization programs: it has been repeatedly shown that children coming out of strong immersion models always match or surpass their counterparts participating in the dominant-language programs, in both classroom performance and standardized testing (Hinton 2001:298-299; McCarty 2003:151-157). Successful language revitalization should therefore be grounded in the advantages of preserving and extending linguistic diversity as well as in the social, cultural, and economic benefits of cross-cultural transfer and communication. In other words, “cultural diversity widens the range of options open to everyone; it is one of the roots of development, understood not simply in terms of economic growth, but also as a means to achieve a more satisfactory intellectual, emotional, moral and spiritual existence” (UNESCO 2002:4).

7 Acknowledgments

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1 Introduction

One way to describe a language’s grammar is as a compact system that encodes the regularities of the language. This system allows someone to immediately comprehend and generate novel linguistic items that follow those encoded regularities, and so grammars are often viewed as generative systems. Notably, because languages vary with respect to the specific regularities they have, the generative system can be instantiated in various ways, based on language-specific input (e.g., as a specific set of parameter values in a parametric system or a specific ordering of constraints in a constraint-ranking system). The variables that can be used in a language’s grammar (e.g., the specific parameters or constraints) are defined by the knowledge representation (KR) and so a KR defines the set of possible grammars underlying human languages, based on those variables.

The utility of KRs for language acquisition then becomes apparent: if the child already has access to the KR, the hypothesis space of grammars that could encode the regularities of the language is already defined. So, the child already knows which variables in the linguistic environment matter, and can focus her attention on simply selecting the appropriate instantiation of the KR (i.e., the language-specific grammar), based on those relevant variables. The language acquisition task is about choosing the correct grammar for the language from those defined by the KR.

These two aspects of KRs lead to two natural criteria for any KR. The first criterion is the cross-linguistic variation criterion, which states that the right KR should be able to explain the constrained cross-linguistic variation we observe in the world’s languages. The cognitive premise of this kind of argument is that it is surprising to see such limited variation if there is no common underlying KR that humans are drawing their language-specific grammars from. KR theorizing then focuses on identifying the most compact representation than can account for the observed, limited variation. In this vein, Hayes (1995:55) notes, for example, that a successful representation of stress knowledge is one that is “capable of describing all the stress systems of the world’s languages” and is “maximally restrictive”.

The second criterion is the learnability criterion, and states that if children have access to

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the right KR, they should be able to learn any language’s grammar from the language input they encounter. This again relates to the idea that the right KR helpfully circumscribes the child’s hypothesis space. However, previous work investigating a parametric KR (Pearl 2009, 2011) has suggested that acquisition is not so straightforward when the learner is given realistic child-directed data to learn from. That is, even with access to the KR, selecting the correct language-specific grammar when learning from realistic language data is non-trivial.

Traditionally, KRs have been proposed based on the first criterion of accounting for constrained cross-linguistic variation (e.g., Halle and Vergnaud 1987; Hayes 1995; Hammond 1999; Pater 2000; Tesar and Smolensky 2000; Prince and Smolensky 2002). This has led to several KR options in different linguistic domains (e.g., metrical phonology: parameters (Halle and Vergnaud 1987; Hayes 1995), violable constraints (Tesar and Smolensky 2000; Prince and Smolensky 2002)). While these KRs often overlap with respect to the linguistic aspects that comprise their variables, they do not rely on the exact same set of variables and so are not obviously notational variants of each other.

Notably, an often tacit assumption has been that a KR that satisfies the cross-linguistic variation criterion will easily satisfy the learnability criterion, precisely because the right KR highlights the relevant variables for the child (e.g., Chomsky 1981; Dresher 1999; Crain and Pietroski 2002). To choose among different KRs, which are viable with respect to the cross-linguistic variation criterion, it seems reasonable to examine them with respect to the learnability criterion. That is, since they can account for cross-linguistic variation, are the grammars they define also learnable?

More specifically, how learnable is the language-specific grammar within a KR, given realistic data from that language? To answer this, we need to define what it means to be learnable, empirically grounding a learnability assessment with available acquisition data and quantifying how learnable a grammar defined by a KR is. We then need to concretely test the KR with a specific language and the data children are using to learn that language’s grammar. Another often tacit assumption about KRs is that having the appropriate KR makes successful acquisition possible even in difficult acquisition scenarios – that is, the reason acquisition occurs so quickly for these “hard” cases is because the child has access to the KR, which tremendously simplifies the acquisition task. Therefore, an informative test for any KR is its ability to handle the hard acquisition cases, and so we should select a language whose grammar is likely to be non-trivial to learn when assessing learnability.

In the remainder of this paper, we first establish formal metrics for comparing KRs, based on a learnability analysis that is empirically grounded in child-directed speech data. We then demonstrate how to use this approach on a case study in metrical phonology, where we compare three KRs. We briefly review the KRs, and then discuss how we will evaluate them with respect to their ability to learn English, which is a notoriously difficult case for acquisition due to known irregularity in the data. We discover, perhaps surprisingly, that all three KRs have learnability issues when applied to learning English, and so the most straightforward argument from acquisition cannot be made for any of them. Nonetheless, we discuss various ways to solve the learnability issues for each KR, which include incorporating additional knowledge that can be derived during acquisition, equipping the learner with helpful learning biases that guide learning, and adjusting the definition of what the English grammar is within the KR. Thus, even though all three KRs have learnability issues for English at first glance, this does not mean we must immediately abandon those KRs –
instead, we can adjust different aspects of the acquisition problem to see if and how each
KR’s English grammar can become learnable. In this way, we can identify KRs that satisfy
both the cross-linguistic variation criterion and the learnability criterion, and so are likely
to be more accurate descriptions of the mental representations of this linguistic knowledge.

2 Learnability metrics

2.1 The learnability approach

Many different approaches to assessing learnability exist (e.g., Pearl 2011; Clark and Lappin
2012; Legate and Yang 2013; Fulop and Chater 2013), and here we propose one that is similar
to those used by Pearl (2011) and Legate and Yang (2013). We will assess learnability
by (i) using realistic input and (ii) assessing it at the computational level (in the sense
of Marr 1982). By evaluating learnability with realistic input, we can more concretely link
learnability to the language acquisition task children actually face. By evaluating learnability
at the computational level, we can focus on the utility of the hypothesis space defined by the
KR: does this view of the relevant grammar variables easily lead the learner to that specific
language’s grammar, given the available language data? Notably, this type of analysis focuses
on the choices that a rational learner would make, given the current hypothesis space and
learning preferences (Goldwater et al. 2009; Pearl et al. 2011; Perfors et al. 2011; Feldman
et al. 2013; Dillon et al. 2013). It abstracts away from how that choice is actually made,
given the cognitive resources available to children. A computational-level analysis can thus
highlight if learnability issues already exist given a particular hypothesis space and learning
assumptions, even before cognitive constraints come into play.

A rational learner will select what it perceives to be the best grammar, and we posit that
the best grammar is the grammar able to account for the most data in the input perceived as
relevant. This relates to the utility of grammars: a grammar is useful because it allows the
learner to compactly represent the regularities in the language data, and so language data
captured by the grammar do not need to be stored in detail. Instead, the relevant aspects
of these data can be described by the compact representation provided by the grammar. So,
the more data accounted for by the grammar, the more useful the grammar is because there
are fewer data that must be dealt with separately (e.g., stored explicitly). Because of this,
from a language use standpoint, the best grammar is naturally defined as the one that can
account for the most data.

2.2 Specific learnability metrics

Once we define the set of data children are learning from, we can evaluate the grammars
defined by any KR on their ability to account for those data. At an individual data point
level, a grammar can be compatible with the data point. For example, a metrical phonology
grammar is compatible with a data point if it can generate the observed stress contour for
that data point. The proportion of data points a grammar is compatible with is its raw
compatibility with that data set. For example, a grammar compatible with 70% of the data
set has a raw compatibility of 0.70. When comparing grammars within a KR, a higher raw
compatibility is better since this indicates the grammar is more useful for accounting for the available data. Thus, the best grammar will have the highest raw compatibility, and be the most useful.

From a learnability perspective however, what matters more than raw compatibility is how a grammar compares to other grammars defined by the KR. This is captured by *relative compatibility*, which is how a grammar’s raw compatibility compares to the raw compatibilities of other grammars in the hypothesis space. We define a grammar’s relative compatibility as the proportion of grammars in the hypothesis space that this grammar is better than, with respect to raw compatibility. The best grammar will have a relative compatibility of approximately 1.00, since it will be better than all other grammars. For example, if there are 768 grammars, then the best grammar is better than 767, which gives a relative compatibility of $\frac{767}{768} = 0.999$. Importantly, no matter what the raw compatibility of the best grammar is, it is the one a rational learner would choose because it is the best of all the grammars defined by the KR.

We can also evaluate the *learnability potential* of a KR, which is simply the raw compatibility of the best grammar (with relative compatibility $\approx 1.00$) defined by the KR. In effect, the learnability potential indicates how good the grammar variables defined by the KR are at accounting for the available data in the learner’s input.

### 2.3 Evaluating the language-specific grammar

To satisfy the learnability criterion in the most straightforward way, the language-specific grammar should be the grammar that is learned most easily from the language’s child-directed input data. This can be empirically tested using the metrics above. If the language-specific grammar is the most easily learned grammar, it should have the highest raw compatibility, which will cause it to have a relative compatibility of approximately 1.00. This, in turn, would cause this grammar’s raw compatibility to be equivalent to the learnability potential of the KR that defines it, since it would be the grammar defined by that KR that is the best at accounting for the language’s child-directed input data.

### 3 Knowledge representations in metrical phonology

For metrical phonology, the observable data is the stress contour associated with a word. For example, *octopus* has stress on the first syllable, but not on the second and third syllables. We can represent this as *óctopus* (/ˈoktəpus/) having the stress contour 100.\(^1\) All the KRs we examine define grammars that assume a word has been divided into syllables and those syllables are classified according to their syllable rimes, so that syllable onsets are ignored (e.g., *strong* (/strəŋ/) is equivalent to /təŋ/, /əŋ/, and /ŋ/). All grammars then form metrical feet comprised of one or more of those syllables, which we will indicate with parentheses, as in (1). Metrical feet are used for determining which syllables to stress, with a single syllable within a metrical foot being stressed.

\(^1\)Here we are only concerned with the distinction between stressed and unstressed syllables, rather than the additional consideration of primary vs. secondary stress among stressed syllables.
A grammar defined by a KR will be associated with an underlying metrical structure, as shown in (1), whose observable form is the stress contour for the word. Importantly for our empirical purposes, each KR has defined a grammar that is meant to account for English, and so that is the grammar we will be particularly interested in evaluating against English child-directed input data. We now briefly review the three KRs we will compare, which include both parametric and constraint-ranking representations.

### 3.1 Parametric knowledge representations

#### 3.1.1 The HV parametric representation

The first parametric KR is adapted from Halle and Vergnaud (1987) (HV), and its learnability has been previously investigated by Pearl (2007, 2011). The HV representation involves five main parameters with three sub-parameters, yielding 156 grammars in the hypothesis space. For a more detailed description of each of the parameters and their interactions with each other, see Dresher and Kaye (1990), Dresher (1999), and Pearl (2007).

**Quantity Sensitivity.** Quantity sensitivity determines whether syllables are treated identically or instead differentiated by syllable rime weight for the purposes of stress assignment. A language could be quantity sensitive (QS), so that syllables are differentiated into (H)eavy and (L)ight syllables. Long vowel syllables with or without codas (VV(C)) are Heavy, short vowel syllables (V) are Light, and short vowel syllables with codas (VC) can be either Light (QS-VC-L) or Heavy (QS-VC-H), yielding three syllable type distinctions (long, short, and closed). In contrast, if the language is quantity insensitive (QI), all syllables are treated identically (represented below as S). Both kinds of analyses are shown in (2) for beautiful.

<table>
<thead>
<tr>
<th>QS analysis</th>
<th>H</th>
<th>L</th>
<th>L/H</th>
</tr>
</thead>
<tbody>
<tr>
<td>syllable rime</td>
<td>VV</td>
<td>V</td>
<td>VC</td>
</tr>
<tr>
<td>syllable IPA</td>
<td>bju</td>
<td>tə</td>
<td>fəl</td>
</tr>
</tbody>
</table>

**Extrametricality.** Extrametricality determines whether all syllables of the word are contained in metrical feet. In languages allowing extrametricality, either the leftmost syllable (Em-Left) or the rightmost syllable (Em-Rt) is excluded (indicated by angled brackets ⟨...⟩). In contrast, languages without extrametricality (Em-None) have all syllables included in metrical feet. Example (3a) shows extrametricality applied to giraffe and octopus, while (3b) shows Em-None applied to afternoon.

---

2Vowel length in English typically corresponds to the tense/lax distinction, such that tense vowels (including diphthongs) are long, while lax vowels are short.
Extrametricality. With QS, QS-VC-H

<table>
<thead>
<tr>
<th>Syllable class</th>
<th>⟨L⟩</th>
<th>H</th>
<th>H</th>
<th>L</th>
<th>⟨H⟩</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllable rime</td>
<td>V</td>
<td>VC</td>
<td>VC</td>
<td>V</td>
<td>VC</td>
</tr>
<tr>
<td>Syllable IPA</td>
<td>dʒə</td>
<td>əæf</td>
<td>VC</td>
<td>V</td>
<td>VC</td>
</tr>
</tbody>
</table>

b. No extrametricality (Em-None), with QS, QS-VC-L

<table>
<thead>
<tr>
<th>Syllable class</th>
<th>L</th>
<th>L</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syllable rime</td>
<td>VC</td>
<td>VC</td>
<td>VVC</td>
</tr>
<tr>
<td>Syllable IPA</td>
<td>əæf</td>
<td>tən</td>
<td>nun</td>
</tr>
</tbody>
</table>

Foot Directionality. Once the syllables to be included in metrical feet are known, metrical feet can be constructed. Feet can be constructed beginning at the left (Ft-Dir-Left), as in (4a), or the right (Ft-Dir-Rt), as in (4b).

(4) a. Ft-Dir-Left, starting metrical foot construction from the left: (L L H
                                           b. Ft-Dir-Rt, starting metrical foot construction from the right: L L H)

Boundedness. The boundedness parameter determines the size of metrical feet. An unbounded (Unb) language has no arbitrary limit on foot size; a metrical foot is only closed upon encountering a Heavy syllable or the edge of the word. If there are no Heavy syllables or the syllables are undifferentiated (S) because the language is quantity insensitive, then the metrical foot encompasses all the non-extrametrical syllables in the word. Some example unbounded foot constructions are shown in (5).

(5) Unbounded metrical foot construction

a. Em-None, Ft-Dir-Left for L L L H L
   beginning: (L L L H L)
   heavy syllable encountered: (L L L) (H L)
   ending: (L L L) (H L)

b. Em-None, Ft-Dir-Rt for S S S S S
   beginning: S S S S S
   ending: (S S S S S)

The alternative is for metrical feet to be Bounded (B), and so to be no larger than a specific size. A metrical foot can be either two units (B-2) or three units (B-3); units are either syllables (B-Syl) or sub-syllabic units called moras (B-Mor) that are determined by the syllable’s weight (Heavy syllables are two moras while Light syllables are one). Only if the word edge is reached can metrical feet deviate from this size (by being smaller than this size). Example (6) demonstrates different bounded foot constructions, with various combinations of these parameter values.

(6) Sample bounded analyses of five-syllable sequences

a. B-2, B-Syl with QS, Em-None, Ft-Dir-Left: (H L) (L L) (L)

b. B-3, B-Syl with QI, Em-None, Ft-Dir-Left: (S S S) (S S)
c. B-2, B-Mor with QS, Em-None, Ft-Dir-Left:

- Mora analysis: $\mu\mu \mu \mu$
- Syllable classification: (H) (L L) (L L)

**Foot Headedness.** Once the metrical feet are formed, the foot headedness parameter determines which syllable within a foot is stressed. Feet headed on the left have the leftmost syllable of the foot stressed (Ft-Hd-Left), shown in (7a), while feet headed on the right have the rightmost syllable of the foot stressed (Ft-Hd-Rt), shown in (7b).

(7) Analyses for (L L) (L), which uses QS, Em-None, Ft-Dir-Left, B-2, B-Syl

- a. Ft-Hd-Left: 1 0 1
  
  \[
  \begin{array}{c}
  \text{(L L)} \\
  \text{(L)}
  \end{array}
  \]

- b. Ft-Hd-Rt: 0 1 1
  
  \[
  \begin{array}{c}
  \text{(L L)} \\
  \text{(L)}
  \end{array}
  \]

**The English HV grammar.** The English grammar for the HV representation differentiates syllables into Heavy and Light, treating VC syllables as Heavy (QS, QS-VC-H). The rightmost syllable of a word is extrametrical (Em-Rt), and metrical feet are built from the right side (Ft-Dir-Rt). A metrical foot spans two syllables (B, B-2, B-Syl), and the leftmost syllable within a foot is stressed (Ft-Hd-Left). A sample analysis using the English grammar is shown for *octopus* in (8). The generated stress contour (100) matches the observed stress contour (Áctopoulos).

(8) English grammar analysis for *octopus* (/akt@pus/):

- QS, QS-VC-H, Em-Rt, Ft-Dir-Rt, B, B-2, B-Syl, Ft-Hd-Left

  stress: 1 0 0
  
  analysis: (H L) (H)
  
  Syllable IPA: ak tɔ pos

**3.1.2 The Hayes parametric representation**

The second parametric system is adapted from Hayes (1995) (henceforth Hayes), and includes eight parameters that concern the basic distinction between stressed and unstressed syllables. These eight parameters yield 768 grammars in the hypothesis space.

**Syllable Weight.** Syllables are characterized as (H)eavy or (L)ight, similar to the QS option in the HV representation. Syllables with long vowels (VV) in their rimes are always Heavy, and syllables with short vowels only in their rimes (V) are always Light. Similar to the HV representation, closed syllables with a short vowel and one or more consonants (VC+) can be treated as either Heavy (VC-H) or Light (VC-L).

**Extrametricality.** Extrametricality is also similar to extrametricality in the HV system. In addition to no extrametricality (Em-None) and syllable extrametricality on the rightmost
(Em-Right) or leftmost (Em-Left) syllable, this representation also permits extrametricality on the rightmost consonant (Em-RtCons), where the rightmost consonant of a word is removed from metrical consideration. Notably, Em-RtCons can interact with syllable weight, as shown in (9). Because Em-RtCons can change the syllable type (e.g., turning a VC syllable into a V syllable), four syllabic distinctions are required in the Hayes representation: short (V), potentially short (VC), closed (VCC+), and long (VV or VVC+).

(9) Sample syllable weight representations interacting with extrametricality, given VC-H

<table>
<thead>
<tr>
<th>syllable class</th>
<th>Em-None</th>
<th>Em-RtCons</th>
</tr>
</thead>
<tbody>
<tr>
<td>extrametricality</td>
<td>VV</td>
<td>H</td>
</tr>
<tr>
<td>syllable rime</td>
<td>VV</td>
<td>V</td>
</tr>
<tr>
<td>syllable IPA</td>
<td>pe</td>
<td>pe</td>
</tr>
<tr>
<td>syllables</td>
<td>pa</td>
<td>per</td>
</tr>
</tbody>
</table>

Foot Directionality. Similar to the HV representation, metrical foot construction can begin from the left edge (Ft-Dir-Left) or the right edge (Ft-Dir-Rt).

Parsing Locality. The parsing locality parameter indicates whether metrical feet are built as adjacently as possible. Strong local parsing (LP-Strong) requires that after a foot is constructed, the next foot should begin with the next syllable (10a). Weak local parsing (LP-Weak) requires that one Light syllable be skipped between feet (10b). Note that Heavy syllables are never skipped, even with weak local parsing.

(10) Sample parsing locality feet construction, with feet comprised of exactly two syllables

a. Em-None, Ft-Dir-Left, LP-Strong

| begin | L | H | L | L | L |
| start next foot | (L | H |) (L | L | L |
| end | (L | H |) (L | L | L |

b. Em-None, Ft-Dir-Left, LP-Weak

| begin | L | H | L | L | L |
| skip L syllable | (L | H |) L | (L | L |
| end | (L | H |) L | (L | L |

Foot Inventory. When constructing metrical feet, there are three options: Syllabic Trochees (Tro-Syl), Moraic Trochees (Tro-Mor), and Iambs (Iamb). A Tro-Syl foot can take two forms: (i) two syllables of any weight with stress on the leftmost syllable (S S), or (ii) a single stressed Heavy syllable at the end of metrical foot construction (H). A Tro-Mor foot can also take two forms, based on the idea that each foot has two moras (L syllables = µ, H syllables = µ µ): (i) two Light syllables with stress on the leftmost syllable (L L), or (ii) a single stressed Heavy syllable (H). An Iamb foot can also take two forms: (i) a Light syllable followed by a syllable of any weight, with stress on the rightmost syllable (L S), or (ii) a single stressed Heavy syllable (H). Example (11) demonstrates foot construction for a word of form H L L H H with each of the different foot types.
(11) Tro-Syl, Tro-Mor, and Iamb metrical feet built for H L L H H, given Em-None, Ft-Dir-Left, and LP-Strong

<table>
<thead>
<tr>
<th></th>
<th>Tro-Syl</th>
<th>Tro-Mor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tro-Syl foot 1</td>
<td>(H) L L H H</td>
<td>(H) L L H H</td>
</tr>
<tr>
<td>Tro-Syl foot 2</td>
<td>(H) (L) H H</td>
<td>(H) (L) L H H</td>
</tr>
<tr>
<td>Tro-Syl foot 3</td>
<td>(H) (L) (H) H</td>
<td>(H) (L) (H) H</td>
</tr>
<tr>
<td></td>
<td>Degenerate foot (H) (L) (H) (H)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Tro-Mor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tro-Mor foot 1</td>
<td>(H) L L H H</td>
</tr>
<tr>
<td>Tro-Mor foot 2</td>
<td>(H) (L) L H H</td>
</tr>
<tr>
<td>Tro-Mor foot 3</td>
<td>(H) (L) (H) H</td>
</tr>
<tr>
<td>Tro-Mor foot 4</td>
<td>(H) (L) (H) (H)</td>
</tr>
</tbody>
</table>

Iamb

Iamb foot 1 | (H) L L H H                           |
Iamb foot 2 | (H) (L) H H                          |
Iamb foot 3 | (H) (L) (H) H                        |
Iamb foot 4 | (H) (L) (H) (H)                      |

**Degenerate Feet.** After constructing feet, edge syllables may remain unfooted. If a language has a strong prohibition against degenerate feet (**DF-Strong**) and an edge syllable is unfooted, a degenerate foot is not allowed to form and the analysis fails (12, lefthand side). If a language instead has a weak prohibition against degenerate feet (**DF-Weak**), a degenerate foot may form if the remaining syllable is Light (12, righthand side).

(12) Analyses of L H with DF-Strong and DF-Weak, given Em-Right and Tro-Mor

<table>
<thead>
<tr>
<th></th>
<th>DF-Strong</th>
<th>DF-Weak</th>
</tr>
</thead>
<tbody>
<tr>
<td>H extrametrical</td>
<td>L (H) H extrametrical</td>
<td>L (H)</td>
</tr>
<tr>
<td>L too small for Tro-Mor foot.</td>
<td>L (H) L too small for Tro-Mor foot.</td>
<td>L (H)</td>
</tr>
<tr>
<td>L ≠ degenerate foot.</td>
<td>L (H) L = degenerate foot.</td>
<td>(L) (H)</td>
</tr>
</tbody>
</table>

Analysis crashes.

**Word Layer End Rule.** The Word Layer End Rule (WLER) can interact with degenerate feet and the analysis direction (see next section) to alter the observable stress contour. If degenerate feet are formed (due to DF-Weak), the WLER determines whether the stress on the degenerate foot survives. WLER can be set to either Left (**WLER-L**) or Right (**WLER-R**) and will allow the stress of any degenerate foot to survive if it is closer to the corresponding edge of the word than any other foot. For example, in a WLER-R language with a degenerate foot on the right edge of the word, the degenerate foot’s stress will survive (13a). In contrast, if the degenerate foot is on the left edge of the word and there are additional feet closer to the right edge, the degenerate foot’s stress will not survive (13b).

(13) Sample analyses of word form L L H L L, showing the interaction of Ft-Dir-Left and Ft-Dir-Rt with WLER-R

<table>
<thead>
<tr>
<th></th>
<th>Ft-Dir-Left, Tro-Syl, LP-Strong, DF-Weak, WLER-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Em-None,</td>
<td>Tro-Mor foot 1</td>
</tr>
<tr>
<td></td>
<td>Tro-Mor foot 2</td>
</tr>
<tr>
<td></td>
<td>Degenerate foot</td>
</tr>
<tr>
<td></td>
<td>Degenerate foot stress survives</td>
</tr>
</tbody>
</table>

406
b. Em-None, Ft-Dir-Rt, Tro-Syl, LP-Strong, DF-Weak, WLER-R

<table>
<thead>
<tr>
<th></th>
<th>Bot-Up</th>
<th>Top-Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tro-Mor foot 1</td>
<td>L L H</td>
<td>(L L)</td>
</tr>
<tr>
<td>Tro-Mor foot 2</td>
<td>L (L H) (L L)</td>
<td></td>
</tr>
<tr>
<td>Degenerate foot</td>
<td>(L) (L H) (L L)</td>
<td></td>
</tr>
<tr>
<td>Degenerate foot stress does not survive</td>
<td>(L) (L H) (L L)</td>
<td></td>
</tr>
</tbody>
</table>

**Stress Analysis Direction.** This parameter determines whethermetrical stress analysis begins with creating feet and then determining word-level stress via WLER (Bot-Up) or begins with word-level analysis using the WLER and subsequently creates feet (Top-Down). Notably, in Top-Down languages, the WLER decides whether the initial (WLER-L) or final (WLER-R) syllable should be stressed, regardless of weight. Parsing of syllables into feet is then constrained by the stress assigned by the WLER at word level. All previous analyses presented have used the Bot-Up value. We demonstrate in (14) how stress analysis direction can interact with the WLER.

(14) Sample analyses of word form L H using Bot-Up versus Top-Down, with Em-None, Ft-Dir-Right, Iamb, LP-Strong, DF-Weak, WLER-L

<table>
<thead>
<tr>
<th></th>
<th>Bot-Up</th>
<th>Top-Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iamb foot</td>
<td>(L Ê)</td>
<td>WLER stresses leftmost syllable L H</td>
</tr>
<tr>
<td>No degenerate feet.</td>
<td>(L Ê)</td>
<td>Cannot create (L Ê) Iamb foot L (Ê) due to L, so create (H) Iamb foot</td>
</tr>
<tr>
<td>Word-level stress remains as is.</td>
<td></td>
<td>DF-Weak creates degenerate foot (L) (H)</td>
</tr>
</tbody>
</table>

**The Hayes English grammar.** The English grammar for the Hayes representation treats VC syllables as Heavy (VC-H) and views the rightmost consonant as extrametrical (Em-RtCons). Metrical feet are built from the right (FtDir-Rt) as adjacent as possible (LP-Strong), and are two moras in size with the leftmost syllable stressed (Tro-Mor). Degenerate feet are not allowed (DF-Strong), so although stress on a degenerate foot would be allowed to survive if it was the rightmost syllable (WLER-R), this aspect does not matter for this layer of metrical stress in English (though WLER-R does matter for distinguishing between primary and secondary stress one layer above). In addition, metrical feet are created before word-level stress is assigned (Bot-Up). A sample analysis using the English grammar is shown for *octopus* in (15). Note that the English grammar generates the incorrect stress contour for this word (110 instead of the observed 100).

(15) English grammar analysis for *octopus* (/oktopus/):

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VC-H, Em-RtCons, FtDir-Rt, LP-Strong, Tro-Mor, DF-Strong, WLER-R, Bot-Up stress</td>
<td>1 1 0</td>
<td></td>
</tr>
<tr>
<td>analysis</td>
<td>(Ê) (L L)</td>
<td></td>
</tr>
<tr>
<td>syllables</td>
<td>ok tɔ pʊ(s)</td>
<td></td>
</tr>
</tbody>
</table>

### 3.2 Constraint-based representations

Optimality Theory (OT) (Tesar and Smolensky 2000; Prince and Smolensky 2002) characterizes linguistic knowledge as a universal set of constraints whose interaction determines
the form of observable linguistic data, and a language’s grammar is a ranking of these con-
straints. Given \( n \) constraints, there are \( n! \) rankings. In our instantiation of OT (Hammond
1999; Pater 2000), there are nine phonological constraints, defining a hypothesis space of \( 9! = 362,880 \) grammars. Additionally, there is one inviolable principle called ROOTING, which
requires all words to have some stress on them and so entails that their analyses contain at
least one metrical foot.

### 3.2.1 Constraints

**Non-Finality (NonFin).** The final syllable is unfooted. In (16), the first candidate form
for *little* (/lɪrɪl/) is preferred since the final syllable is not included in a metrical foot.

\[
\begin{array}{|c|}
\hline
\text{Input: /lɪrɪl/} \\
\text{a. (lɪ) rɪl} \\
\text{b. lɪ (rɪl)} \ast! \\
\hline
\end{array}
\]

**Trochaic (Tro).** Feet are headed on the left. In (17), the first candidate for *mommy*
(/mamɪ/) is preferred since its sole foot has stress on the leftmost syllable.

\[
\begin{array}{|c|}
\hline
\text{Input: /mamɪ/} \\
\text{a. (m´a mɪ)} \\
\text{b. (mam´ı)} \ast! \\
\hline
\end{array}
\]

**Weight-to-Stress Principle VV (WSP-VV).** Syllables with long vowels should be
stressed. The first candidate in (18) for *canoe* (/kənu/) is preferred since its second syllable
has a VV rime and is stressed.

\[
\begin{array}{|c|}
\hline
\text{Input: /kənu/} \\
\text{a. (kə n´u)} \\
\text{b. (k´n u)} \ast! \\
\hline
\end{array}
\]

**Weight-to-Stress Principle VC (WSP-VC).** Syllables closed by consonants should be
stressed. The first candidate in (19) for *little* (/lɪrɪl/) is preferred since its second syllable
has a VC rime and is stressed.

\[
\begin{array}{|c|}
\hline
\text{Input: /lɪrɪl/} \\
\text{a. (lɪ rɪl)} \\
\text{b. (lɪ rɪl)} \ast! \\
\hline
\end{array}
\]
Foot Binarity (FtBin). Feet are binary (contain two units) at some level of analysis (e.g., syllables or moras). The first candidate for little in (20) is preferred since the sole metrical foot contains two syllables.

(20)  
<table>
<thead>
<tr>
<th>Input: /lI r İl/</th>
<th>FtBin</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ́ (lI r İl)</td>
<td></td>
</tr>
<tr>
<td>b. ́ (lI) r İl</td>
<td>*!</td>
</tr>
</tbody>
</table>

Align Right (Align-R). Align the right edge of a foot to the right edge of the prosodic word. This constraint prefers metrical feet to have their right edge as close as possible to the right edge of the word, and so the third candidate for horizon (hərajzən) in (21) is preferred.

(21)  
<table>
<thead>
<tr>
<th>Input: /hə raj zən/</th>
<th>ALIGN-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (há) raj zən</td>
<td><em>!</em></td>
</tr>
<tr>
<td>b. hə (raj) zən</td>
<td>*!</td>
</tr>
<tr>
<td>c. ́ hə raj (zən)</td>
<td></td>
</tr>
</tbody>
</table>

Align Left (Align-L). Align the left edge of a foot to the left edge of the prosodic word. This constraint prefers metrical feet to have their left edge as close as possible to the left edge of the word, and so the first candidate for horizon in (22) is preferred.

(22)  
<table>
<thead>
<tr>
<th>Input: /hə raj zən/</th>
<th>ALIGN-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ́ (há) raj zən</td>
<td></td>
</tr>
<tr>
<td>b. hə (raj) zən</td>
<td>*!</td>
</tr>
<tr>
<td>c. hə raj (zən)</td>
<td><em>!</em></td>
</tr>
</tbody>
</table>

Parse-Syllable (Parse-σ). Syllables must belong to feet. Extrametrical syllables violate this constraint and so the first candidate for mommy in (23) is preferred.

(23)  
<table>
<thead>
<tr>
<th>Input: /mA mi/</th>
<th>PARSE-σ</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ́ (mA mi)</td>
<td></td>
</tr>
<tr>
<td>b. (mA) mi</td>
<td>*!</td>
</tr>
</tbody>
</table>

*Sonorant Nucleus (*SonNuc). Syllables should avoid having sonorant nuclei. The first candidate for little in (24) is preferred since none of its syllables have sonorant nuclei.
3.2.2 Syllabic distinctions

These constraints require eight syllabic distinctions, which divide syllables generally into short, closed, long, and super-long variants. The short variants are these: (i) short vowel open (V), as in the first syllable of *kitty* (/kɪ rɪ/), and (ii) sonorant nucleus (R), as in the second syllable of *actor* (/æk tr/). The closed variants are these: (i) short vowel closed (VC), as in *took* (/tʊk/), (ii) short vowel closed by a sonorant consonant (VR), as in *them* (/ðɪm/), (iii) short vowel closed by a sonorant consonant and another consonant (VRC), as in *tent* (/tɛnt/), and (iv) sonorant nucleus closed by another consonant (RC), as in *heard* (/hɜrd/). The long variant is a long vowel (VV), as in the second syllable of *kitty* (/kɪ rɪ/), and the super-long variant is a long vowel closed with a consonant (VVC), as in *boot* (/bʊt/).

3.2.3 The OT English grammar

The OT “grammar” for a language is often a partial ordering of constraints, and so corresponds to multiple grammars that are explicit rankings of all nine constraints. In this vein, the English grammar described by Hammond (1999) and Pater (2000) obeys ten constraint ranking relationships, which correspond to 26 grammars that explicitly rank all nine constraints. This partial ordering is shown in Figure 1, where each arrow represents a constraint ordering that is true of the English grammar.

![Figure 1: Partial ordering of constraints defining the English grammar.](image)

The tableau below is an evaluation of a grammar satisfying the English constraint rankings on *little* (/lɪrl/). Because the final /l/ could be the nucleus of the second syllable, eight candidates are generated. The optimal candidate for the grammar has a stress contour that matches the observed stress contour of *little* (ˈlɪtl).
4 English metrical phonology

English metrical phonology is an excellent test case for metrical phonology KRs, since the data are irregular and make acquisition of the target knowledge difficult. So, if a learner using a particular KR can succeed at acquiring the English grammar from realistic English input data, this provides very good support for the utility of this KR for acquisition.

But what makes English data so difficult with respect to acquisition? The first issue is that many data are ambiguous for which parameter value or constraint-ranking they implicate, due to parameter or constraint interaction. For example, consider two grammars defined by the HV parametric KR that cucumber (/kjukəmbər/) is compatible with, shown in (25). Quite strikingly, these two grammars have no parameter values whatsoever in common, yet are able to generate the same stress contour (contour 110).

(25) Two grammars cucumber is compatible with
   a. QI, Em-None, Ft-Dir-Rt, B, B-2, B-Syl, Ft-Hd-Left
      Analysis (Ș) (Ș S) Syllables kju kəm bəɾ
   b. QS, QS-VC-H, Em-Some, Em-Right, Ft-Dir-Left, Unb, Ft-Hd-Rt
      Analysis (Ĥ) (Ĥ) (Ĥ) Syllables kju kəm bəɾ

Data ambiguity is a common problem for language acquisition – in fact, the infamous poverty of the stimulus concerns exactly this issue (e.g., Chomsky 1980; Baker and McCarthy 1981; Hornstein and Lightfoot 1981; Crain 1991; Pinker 2004; Pearl and Mis 2011). Clearly English metrical phonology is no exception. We can easily see that the observable stress contour data can be compatible with multiple hypotheses about the underlying structure from (25) above.

English metrical phonology data have another less common problem, however: There are numerous exceptions to the underlying system representing the target grammar, no matter which grammar is selected as the target grammar (Pearl 2011). How could this be? First, there are known interactions with both morphology (Chomsky and Halle 1968; Kiparsky...
1979; Hayes 1982) and grammatical category (Chomsky and Halle 1968; Hayes 1982; Kelly 1988; Kelly and Bock 1988; Hammond 1999; Cassidy and Kelly 2001). For example, in \textit{préty/prêtier/prétiest} and \textit{sensation/sensational/sensationally}, adding inflectional and derivational morphology does not shift the stress, despite adding syllables to the word. This would be unexpected in the purely phonological systems described by the KRs above, since additional syllables typically alter which syllables are stressed in a word. For grammatical categories, there are examples like \textit{cónduct/condúct} and \textit{désert/desért}, where the grammatical category influences the stress pattern (i.e., nouns are stress-initial while verbs are stress-final). This is again unexpected in the purely phonological systems described above, since they would generate/select a single stress pattern for a syllabic word form (i.e., abstracted to syllable rime, so \textit{conduct} is VC VC), irrespective of grammatical category.

Notably, these irregularities in the data can cause multiple stress contours to appear for a single syllabic word form, as we saw in the grammatical category examples above. This is problematic because, as mentioned above, a grammar can only generate/select a single stress contour per syllabic word form. This means there is no way for a single grammar – no matter which grammar it is – to account for all the English data in a learner’s input.

But how often does a syllabic word form have multiple stress contours associated with it in realistic acquisition data? We examined the Brent corpus of the American English subsection of CHILDES (MacWhinney 2000), which contains speech directed at children between the ages of six and twelve months (99968 multisyllabic word tokens, 4780 multisyllabic word types). If we examine only non-monosyllabic words, under the assumption that at least two syllables are required to have a stress contour, we find this issue occurs quite often: 51% (HV), 58% (Hayes), or 37% (OT) of all syllabic word forms have multiple stress contours. This underscores why no single grammar can be compatible with all the input data, and thus why acquisition of the target grammar for English may be difficult, given realistic English acquisition input. In particular, it will be impossible for the English grammar in any of these KRs to account for all the input data, due to the numerous irregularities in the input data.

Clearly, the interactions between metrical phonology, morphology, and grammatical category that lead to some of these irregularities are part of the complete target knowledge for English. However, children may not hypothesize these interactions when they first begin learning grammars for metrical phonology (which Kehoe 1998 suggests occurs before the age of two). Thus, in the initial stages of English metrical phonology acquisition, children may assume the metrical phonology system is autonomous and only look within the phonological KRs to select the grammar that best accounts for the input, perhaps noting that there are irregularities that must be accounted for later on.

5 Learnability comparison for English input data

5.1 Learnability potential

Given how many syllabic word forms have multiple stress contours, it is reasonable to wonder how well any one grammar within these KRs could possibly do. In particular, what is the largest quantity of data that any single grammar can account for? This represents the learnability potential of the KR. It turns out that all three KRs have a grammar that is
able to account for about $\frac{2}{3}$ of the word types (0.657-0.683) and about $\frac{3}{4}$ of the word tokens (0.729-0.750), as shown in Table 1. This suggests that the best grammar in each knowledge representation is quite useful to have, since it can account for a large portion of the input (even if not all the input can be accounted for). Therefore, each KR is capable of defining a grammar that would be useful for the child to acquire.

5.2 English grammar compatibility

Since it is possible to learn a useful grammar from these data, the next reasonable question is whether the English grammar is the most useful one to learn. This is indicated by the English grammar’s compatibility with the English input data. Table 1 shows that the English grammar in all three KRs (or the best instantiation of the English grammar, in the case of the OT representation) is not compatible with as much data as the best grammar (types: 0.485-0.593, tokens: 0.531-0.716). The (best) English grammar is clearly not the most compatible grammar, and so a rational learner looking for the grammar capable of accounting for the most input data would not select it.

But recall that raw compatibility does not matter as much as relative compatibility, since a learner is selecting a grammar from a circumscribed hypothesis space. Though the (best) English grammar accounts for fewer data than the best grammar, how does it compare to the rest of the grammars that are available? It could be that the (best) English grammar, while having a significantly lower raw compatibility than the best grammar, is the next best grammar overall for accounting for the English input data. If that were true, children might have a better chance of selecting the English grammar, especially if they are not perfectly rational learners. That is, if the relative compatibility of the (best) English grammar is very high, children may still be able to learn it fairly easily from English input.

Unfortunately, this turns out not to be true for any of the knowledge representations. As Table 1 shows, the parametric English grammars are better than about $\frac{2}{3}$ of the grammars in the hypothesis space (types: 0.673-0.676, tokens: 0.673-0.685) and the best constraint-based grammar is better than about $\frac{4}{5}$ of the grammars in the hypothesis space (types: 0.817, tokens: 0.785). This indicates that the English grammars are better than many other grammars – but there are a large number of grammars that are better than the English grammars. For the parametric KR s, tens or hundreds of grammars are better able to account for the English input (types: HV=51, Hayes=249; tokens: HV=51, Hayes=242) while for the constraint-based KR, tens of thousands of grammars are better (types: OT=66,407, tokens: OT=78,019). In short, the target English grammar is unlikely to be easily learnable from this hypothesis space of grammars.

5.3 Learnability summary

For all three KR s, there are learnability issues. Using realistic English child-directed input, it is difficult to learn the English grammar in each KR. More specifically, a rational learner looking for the grammar best able to account for the observable English input would not select the target English grammar in any of these KR s.
Table 1: Learnability analyses for the three knowledge representations: HV, Hayes, and OT. The three metrics shown are learnability potential of the knowledge representation (KR:Pot), raw compatibility of the (best) English grammar (Eng:Raw), and relative compatibility of the (best) English grammar (Eng:Rel), which are computed over word types and word tokens in English child-directed speech. The word token score is shown in parentheses.

<table>
<thead>
<tr>
<th></th>
<th>KR:Pot</th>
<th>Eng:Raw</th>
<th>Eng:Rel</th>
</tr>
</thead>
<tbody>
<tr>
<td>HV</td>
<td>0.668 (0.739)</td>
<td>0.593 (0.716)</td>
<td>0.673 (0.673)</td>
</tr>
<tr>
<td>Hayes</td>
<td>0.683 (0.750)</td>
<td>0.485 (0.531)</td>
<td>0.676 (0.685)</td>
</tr>
<tr>
<td>OT</td>
<td>0.657 (0.729)</td>
<td>0.573 (0.574)</td>
<td>0.817 (0.785)</td>
</tr>
</tbody>
</table>

6 Addressing the learnability issues

The learnability problem can effectively be summarized as the learner not being able to learn the target grammar, given the initial knowledge state provided by the KR and realistic English input. Below we present three potential ways around this apparent problem so that the three KRs could satisfy learnability for English.

6.1 Intermediate knowledge states

Experimental data suggest that there may be several intermediate knowledge states when learning English metrical phonology. First, there is a trochaic metrical template used at age two (Gerken 1994, 1996), which could implement a preference for a quantity insensitive metrical foot spanning two syllables, with stress on the leftmost syllable. Then, by age three, children have recognized that the metrical system is quantity sensitive, but not that the rightmost syllable is typically extrametrical (Kehoe 1998). It therefore seems possible that there are additional transitory states before the final knowledge state is achieved at age four or five (e.g., Pettinato and Verhoeven 2008; Arciuli et al. 2010).

One reason that there might be intermediate knowledge states is that children may perceive the input differently as they gain more linguistic knowledge. For example, when learning the metrical phonology system, gaining knowledge about the interaction between metrical phonology and morphology would allow children to perceive and analyze their input data differently. This new analysis could then cause them to abandon an intermediate non-target grammar and instead learn the target English grammar, because the target English grammar would then become the one able to account for the most input data.

One useful piece of knowledge to acquire is that productive affixes in English tend to be stressless or bear weak stress if there are multiple stressed syllables in a word (Hayes 1995). For example, in *sensationally*, the derivational affixes *-al* and *-ly* are not stressed, and in *préttiest*, the inflectional affix *-est* is not stressed. But when do children acquire knowledge of productive English affixes, and is it early enough that they’re likely to use this knowledge when acquiring the English metrical phonology grammar? While knowledge of derivational morphology appears to develop fairly late (well into primary school, where it may be explicitly instructed (Tyler and Nagy 1989; Stotko 1994; McBride-Chang et al. 2005; Jarmulowicz et al. 2008)), children develop knowledge of inflectional morphology much earlier, often using it
productively in their own utterances by age three (Brown 1973). Given their own usage of inflectional morphology, it is possible that children have noticed by this age that inflectional morphology is not stressed and rarely alters the stress on a word. They could then apply this acquired knowledge when learning the target English metrical phonology grammar. In particular, they could ignore inflectional morphology when attempting to determine the analysis underlying an observable stress contour. Thus, \textit{pr"e\textsc{e}tiest} (/pr"e\textsc{e}ti/ri/) would be viewed as \textit{pr"e\textsc{e}tti} (/pr"e\textsc{e}tri/) for the purposes of learning the metrical phonology grammar.

To investigate the impact of this kind of acquired knowledge, we re-analyzed the English input data for their compatibility with the various grammars after removing inflectional morphology (plural \textsc{-s}, possessive \textsc{'s}, past tense \textsc{-ed}, progressive \textsc{-ing}, past participle \textsc{-en}, comparative \textsc{-er}, and superlative \textsc{-est}).\footnote{Note that if a word was previously multisyllabic but became monosyllabic after ignoring inflectional morphology (e.g., \textit{sweetest} becoming \textit{sweet}), it was analyzed as being compatible with all grammars.} This simulates the learner ignoring inflectional morphology in the input when learning the English metrical phonology grammar.

How does the (best) English grammar compare to the rest of the grammars in the hypothesis space, once the learner has this acquired knowledge about inflectional morphology? Does this now make the (best) English grammar have a high relative compatibility? In fact, it does not: HV = 0.712, Hayes = 0.704, and OT = 0.786 by types. This again indicates that the English grammars are better than many other grammars (between 70 and 80\% of the hypothesis space) – but there are still a large number of grammars that are better than the English grammars. Once again, the target English grammar is unlikely to be easily learnable from this hypothesis space of grammars, even with this acquired knowledge.

One pervasive issue that occurs is that the English grammars in all three KRs typically want syllables with a long vowel nucleus (e.g., \textit{sweet}) to be stressed. This can be problematic for realistic child-directed speech since many words (and often very frequent words) have unstressed long vowel syllables, such as \textit{b\textsc{a}by} (2158 tokens) and \textit{k\textsc{i}tty} (1261 tokens).

One way to deal with these problematic data is to acquire additional knowledge that will allow the learner to view them as compatible with the English grammar. For example, the perception that the diminutive affix /\textsc{i}/ is a kind of inflectional morphology could occur because it communicates affection and attaches to the root form of a noun as a suffix (e.g., \textit{dog} becomes \textit{doggie}), occasionally altering the root form in the process (e.g., \textit{cat} becomes \textit{kitty}). It is unclear when children acquire knowledge of the diminutive in English, but if they are able to use it productively around the time when they productively use other inflectional morphology, then it is likely they acquire it while they are learning the metrical phonology grammar of English. They could then use this knowledge to perceive these diminutive data differently, ignoring the diminutive affix for purposes of metrical phonology. The diminutives then become compatible with the English grammars in all three KRs. This general strategy of ignoring certain aspects of the input data could be very helpful, since so many stress data are irregular in English. In the next section, we discuss other ways children might utilize this type of selective learning strategy on English input.
6.2 More sophisticated learning

Perhaps the learning process is more sophisticated, with the learner having useful prior knowledge that guides learning. Thus, the initial knowledge state also includes helpful learning biases for navigating the hypothesis space defined by the KR. Both of the learning biases we discuss below are predicated on the same basic idea: instead of trying to account for all of the input data with a grammar, the learner tries to account for only a subset of the input data that are perceived as relevant for determining the correct grammar. In essence, the learner’s data intake (Fodor 1998; Pearl 2007; Gagliardi et al. 2012; Gagliardi 2013) is a subset of the available input, due to these learning biases.

The first learning bias of this kind is to learn only from data perceived as unambiguous by the learner (Fodor 1998; Pearl 2008). This might result from a more general bias to prefer highly informative data, where unambiguous data would be viewed as maximally informative. Pearl (2008, 2011) demonstrated how this kind of bias could be used to learn the HV English grammar from realistic English child-directed data. Data points were viewed as potentially unambiguous with respect to a particular parameter value in the HV KR, e.g., a bisyllabic word with stress on the leftmost syllable like *báby* would be viewed as unambiguous for metrical feet headed on the left (Ft-Hd-Left). This allowed the learner to identify a very small subset of useful data points (never more than 5% of the input for any parameter value). When coupled with some additional knowledge about the order in which parameters must be learned, this unambiguous data bias allowed the learner to successfully navigate the HV hypothesis space of grammars. Thus, this more sophisticated learner did not encounter the learnability problem we discovered here for the HV KR with an unbiased learner. It is therefore possible that the other KRs would also surmount their learnability issues if the learner were equipped with these helpful learning biases.

In a similar vein, another potentially helpful learning bias is to learn only from data viewed as regular (rather than irregular), with the idea that a regular data point will have a productive rule associated with it (Legate and Yang 2013). Each productive rule is then something the learner is interested in capturing with the grammar for the language. One way children might implement this bias when learning metrical phonology is to assume that for every syllabic word form that has multiple stress contours (e.g., VVV: *kítty, awáy, úh òh*), one stress contour may be the regular, productive stress contour while the others are exceptions. A formal way to identify if there is a productive rule for a set of items is the Tolerance Principle (Yang 2005; Legate and Yang 2013), which is used to estimate how many exceptions a rule can tolerate before it’s no longer useful for the learner to have the rule at all. Effectively, if there are too many exceptions, it is better to simply deal with the exceptions on an individual basis rather than bothering to learn a rule that is often violated. For N items, the total exceptions a rule can tolerate is \( \frac{N}{\ln N} \). If there are more exceptions than this, then the rule is not productive.

The metrical phonology learner would apply the Tolerance Principle when considering any syllabic word form with multiple stress contours. At any point during acquisition, there are two possible outcomes. One option is that one contour may be the regular contour according to the Tolerance Principle, and so the learner would attempt to account for only the data with that stress contour (e.g., *kítty*), ignoring the other data for that syllable word form (e.g., *awáy, úh òh*) when trying to learn the grammar. The other option is that no
contour is regular according to the Tolerance Principle, and so all the data for that syllable word form are ignored when trying to learn the grammar. Similar to a learner using the unambiguous data bias, it may be that this bias to learn only from regular data helps the learner perceive the input in a way that causes the English grammar in each KR to be compatible with far more data, and so surmount the apparent learnability problem.

6.3 Different target states for English

A third way to deal with the learnability problem is to simply change what the target grammar for English is. One idea is to look at the grammars within each KR that are more compatible with the English child-directed data, and examine what about these high compatibility grammars makes them more compatible. We examine each KR in turn, looking at the grammars that have \( \geq 0.70 \) token compatibility, since that seemed to be a good threshold that separated the high-compatibility grammars from the lower-compatibility grammars.

For the HV KR, it turns out that the grammar currently defined for English uses all the parameter values that the majority of the high-compatibility grammars do (e.g., 53 of 58 high-compatibility grammars use the Em-Rt value, which makes the rightmost syllable extrametrical, and this is the same parameter value the current English grammar uses). So, there is no one value that is obviously “wrong” for English child-directed input – it’s simply that when all these parameter values are combined, they’re sub-optimal. Therefore, there is no obvious change to the target grammar definition that will improve learnability for the HV KR. However, this does suggest that a learner attempting to learn these parameter values individually may succeed, and that may be why the unambiguous data bias used in Pearl (2008) worked so well – it forced the learner to learn the values separately, since data are unambiguous only with respect to a single parameter value.

However, it turns out that the Hayes KR can benefit significantly by altering some of the values in the current definition of the English grammar. One change is to alter the form of the metrical foot from moraic trochees (Tro-Mor) to syllabic trochees (Tro-Syl). This would allow the grammar to account for bisyllabic words with an unstressed Heavy syllable at the end, such as \( \text{baby} \) and \( \text{kitty} \). Making this update boosts the relative compatibility to 0.910 by types. Thus, this new English grammar with the Tro-Syl foot inventory value now is far more learnable compared to other grammars in the Hayes hypothesis space, as it is better at accounting for the English child-directed data than 9 out of 10 of them.

An alternative update to the definition of the Hayes English grammar also yields promising results. This involves changing the extrametricality parameter from Em-RtCons (the rightmost consonant is extrametrical) to Em-Rt (the rightmost syllable is extrametrical) and changing the degenerate foot parameter from DF-Strong (don’t allow degenerate feet) to DF-Weak (allow degenerate feet for single Light syllables at word edge). This allows the grammar to account for words like \( \text{prétty} \), as the rightmost syllable is extrametrical (and therefore unstressed), while the single Light syllable \( \text{pre} \) can form a degenerate foot and be stressed. Making this update boosts the relative compatibility to 0.923 by types. Thus, this new English grammar with the Em-Rt and DF-Weak values now is also far more learnable compared to the other grammars in the Hayes hypothesis space, as it is also better at accounting for the English child-directed data than 9 out of 10 of them.

Turning to the OT KR, we find that there is a single ordering constraint update that
is very beneficial. All of the high-compatibility grammars rank NonFin higher than Wsp-vv, which means that it is more important to make the rightmost syllable extrametrical (NonFin) than it is to stress long vowel syllables (Wsp-vv). The current definition of the English grammar has the opposite ranking (Wsp-vv > NonFin), preferring to stress all long vowel syllables no matter where they are in the word. This makes the current English grammar unable to account for words like baby, which have an unstressed long vowel syllable as the rightmost syllable. Altering this ranking so that NonFin is more important (NonFin > Wsp-vv) boosts the relative compatibility to 0.988. Thus, even more so than the Hayes English grammar, updating the OT English grammar allows this grammar to be far more learnable than the other grammars in the OT hypothesis space, since it is better at accounting for the English child-directed data than nearly 99 out of 100 of them.

6.4 Summary

The basic issue we encountered is that all three KRs appear to have learnability issues when it comes to learning the English grammar they define from realistic English child-directed input. So, while these KRs satisfy the criterion of accounting for constrained cross-linguistic variation, they all seem to fail the learnability criterion when it comes to English. However, there are ways that they may be able to satisfy the learnability criterion after all.

First, it may be that children do not reach the target English grammar immediately, but instead pass through one or more transitory grammars. As they acquire useful knowledge about English metrical phonology, they may perceive the input differently and so update their non-target grammars to the target English grammar. We investigated the addition of one type of useful knowledge about the interaction of English metrical phonology with morphology that is likely to be acquired early enough to be used by children. However, this knowledge was not sufficient on its own, and other knowledge may required for unbiased learners to learn the target English grammar in each KR. Experimental work may be able to determine what useful knowledge children acquire early enough to use when learning their metrical phonology grammar, as well as any transitory grammars they may converge on during acquisition.

A second option is that children are not unbiased learners, as our basic learnability analysis assumed, and they have useful learning biases that help them navigate the hypothesis space of grammars defined by each KR. Two potentially useful biases involve learning a grammar that accounts for a subset of the available input data (as defined by each bias), rather than all of it. The HV KR has been shown to benefit from exactly this type of bias, when the learner also has some prior knowledge about the order in which to learn parameters (Pearl 2008).

A third option is to update the definition of the target grammar for English to something that is more learnable from realistic input data. For the Hayes and OT KRs, there were potential minor updates that significantly improved learnability. Future experimental investigations can determine if adult knowledge corresponds better to these updated English grammars or if these grammars are perhaps intermediate knowledge states for children during acquisition. Future computational investigations on adult-directed English data may also help determine if the current target grammars are the most compatible with the data adults typically encounter. If not, this suggests that updating the definition of the target
English grammar is warranted – not only would the updated grammar be more learnable from child-directed speech, but it would be more compatible with adult knowledge.

For all three KRs, there are ways to potentially make the English grammars in them learnable. If it turns out that some are still not learnable, then this is support in favor of the ones that are in fact learnable. If it instead turns out that all are learnable, then it matters what each KR needs to satisfy learnability for English. If transitory knowledge states are assumed, we must find evidence that children pass through those transitory states. If prior knowledge is required, we must find evidence that children have that prior knowledge. If the adult knowledge is assumed to be different, we must find evidence that adult knowledge is indeed that way. Thus, computational investigations about learnability can lead to targeted experimental and further computational investigations that indicate which theoretical representations are accurate.

7 Conclusion

In this paper, we have established a methodology for quantitatively evaluating different knowledge representations (KRs), based on the learnability of their language-specific grammars from realistic acquisition input. We have used this approach to investigate KRs in metrical phonology, evaluating them on their ability to learn the target English grammar from realistic English data. English is an excellent test case for metrical phonology learnability, since it contains many irregularities and therefore represents a difficult acquisition scenario. So, if a KR allows a learner to successfully acquire the English grammar, that KR truly is useful for acquisition.

While we found that all three KRs have apparent learnability issues, we also were able to discover what causes the failure and what could be done about it. This led us to propose possible changes to the way acquisition must proceed for a given KR and possible changes to the definition of the target grammars for English within existing KRs. Thus, this computational approach allows us to suggest useful alterations to both the theories about how learning proceeds in this domain and the theories about how knowledge in this domain is represented.

8 References


The Rhetorics of Urban Aboriginal Place-Making: Studying Aboriginal and Non-Aboriginal Relationship Building in the Intercultural Speaking Event

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1 Introduction

Aboriginal peoples in Canada have long struggled to set the terms of their relationship with non-Aboriginal settlers and with the state more generally. Over the past 50 years, hard fought battles over broken treaty promises and unrecognized land claims have been waged in Canadian legislatures and courts of law, sites far removed from Canada’s non-Aboriginal population. As global social and economic forces bring people of all backgrounds to urban Canada, Aboriginal people and Settlers are coming face-to-face more than ever. From art galleries to cultural festivals, panel talks to political rallies, new fronts are opening that allow Aboriginal people to not only seek redress over ongoing colonial injustice, but also to perform an Aboriginal presence that challenges other assiduous social wrongs, namely, pervasive assumptions endemic in Canadian society about the (non)place of Aboriginal cultures in modern, Western cities. Joining the courtroom and parliament floor are platform events emerging as important sites for re-writing the Aboriginal and non-Aboriginal relationship.

This paper takes up a particular class of public, Aboriginal platform events, what can be glossed as “Aboriginal, intercultural public speaking event.” These are popular education events that feature Aboriginal speakers speaking about issues that affect Aboriginal life and that are primarily addressed to non-Aboriginal audiences. Since the Idle No More movement, and with growing public concern over the environmental costs associated with resource extraction, there has been a rise in the number of these events across Canada. After two centuries of being spoken

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2 Collective terms used to designate the original peoples of the Americas have always been troublesome. With the United Nations 2008 Declaration on the Rights of Indigenous Peoples the term “Indigenous” has gained favor in Canada and is widely used in activist circles, joining local movements with a wider global struggle. “Aboriginal” is a colonial term; there were, of course, no “Aboriginals” prior to European contact, only people and the various nations to which they belonged. The term (which includes First Nations, Inuit, and Métis) has also been criticized by Kanien’kehá:ka scholar Taiaike Alfred (2005) as bureaucratic and fossilizing. It remains, however, the term of preference in scholarship and policy, and because this paper is an instance of scholarship, I use it here rather than servicing “Indigenous” to the same ends. I also use “Aboriginal” because (to me) it signals the Canadian context which this paper addresses. In the end, the problem is not so much the collective term used but that Canadians continue to organize ourselves in such a way that collective terms are indispensable. “Settler,” on the other hand, is increasingly used to identify non-Aboriginal Canadians (as well as their relatively recent arrival).
for, these talks are relatively new and promising opportunities for Aboriginal people to speak on their own behalf. I am interested in these talks as new strategies in Aboriginal peoples’ battles over resource management, treaty recognition, and social inclusion. But I am also interested in them as a kind of discourse activity—a genre of interaction that may, like the textbook or museum display, have implications for the ways in which non-Aboriginal people understand and relate to their Aboriginal counter-parts in urban contexts. How (if at all) can researchers begin to appreciate the social consequence of this practice of communicating? In what ways can researchers untangle its broader importance, particularly as they occur in spaces where Aboriginal presence has been largely erased? In this paper, I aim, primarily, to establish the case for researching these events as key moments in the production of cultural difference and to explore how a rhetorically grounded discourse analysis might shed light on the larger social force of this kind of intercultural engagement.

But in doing so, and in hopes of responding more broadly to issues of diversity and language as it has been shaped by globalization, I also want to make the case that attention to spaces, places, and practices of difference-making be prioritized in sociolinguistic work on diversity—that is, prioritizing the “how” of difference rather than the “what.” While such a rhetorical approach might be particularly appropriate for Aboriginal or “fourth-world” communities, where centuries of colonial meddling complicate the ways in which cultural continuity and cultural change might be practiced and tracked, I think the lesson applies more generally: whenever sociolinguists take up issues of diversity, familiar concerns with difference—with what is or is not distinctive about individuals or groups—might be better replaced with a focus on the communicative situations in which difference is expressed and becomes meaningful. Sociolinguistic research into diversity may have more to say about the kinds of things we do than the kinds of people we are.

With these goals in mind, this paper explores two public speaking events that took place late 2013 and early 2014 in Montreal, Quebec. After a short reflection on globalization and Aboriginal communities, I will examine the first event, a brief self-introduction by a young Onondaga activist, drawing on current trends in sociolinguistic research into diversity. Both the speech event and the analytical approach appear limited from the perspective of the other, suggesting that a full appreciation of the self-introduction requires a different tack. I then try to build a case for shifting the ground of sociolinguistic inquiry from “participant-focused” to “situation-focused” by situating this work in the wider scholarship on the “translation” of culture before taking up the second talk. The sequence of episodes from this talk serve as a fairly lucid example of how the situation of the intercultural public talk bears on what can be said and who speakers can be.

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3 Borne in Saskatoon, Saskatchewan, the Idle No More movement emerged in late 2012 in response to changes to oversight of waterways through Aboriginal territory introduced by the Canadian government. The pan-Indigenous movement gained considerable support across North America and beyond throughout early 2013 and continues to mobilize on a number of fronts. The de-centralized movement spawned a number of teach-ins, workshops, round-dances, and demonstrations throughout Canada.
Globalization, Aboriginal diversity in Canada, and sociolinguistics

Although Aboriginal people do not often figure in discussions on globalization, they are no strangers to it. For many Aboriginal people in Canada, the federal government’s tireless effort to open Indigenous territory (and the resources found therein) to foreign capital is simply an extension of earlier colonial practices, with similar destructive effects to Aboriginal political, cultural, and linguistic traditions. The fight for jurisdiction over, and shared management of, the economic development of traditional Aboriginal territory is part and parcel with the tremendous work Aboriginal communities are now undertaking to re-build and revitalize their cultural heritage. Such cultural revitalization work is challenged, however, by an increased urbanization of Canada’s Aboriginal population. Local economic and social opportunities for Aboriginal people have not matched the industrialization of Aboriginal territory. Many of the same push and pull forces that have led migrants from around the world to Canadian cities have likewise touched Aboriginal people. Although often overlooked, Aboriginal people are now part of the intense diversity that characterizes cities throughout North America. Over half of all Aboriginal people in Canada now live in urban areas. Canadian cities are, necessarily, becoming key sites in the struggle for Aboriginal cultural and political sovereignty.

Indeed, Aboriginal presence in urban spaces is itself a kind of politics. Widely held conceptions in Canada have long pitted Aboriginal culture and identities as incompatible with modern, urban life (see E. Peters 1996, 2009). These conceptual models, both pervasive and persistent, render Aboriginal presence in the urban landscape anachronistic, and they serve as facile explanations for the social issues many urban Aboriginal people face. And yet, despite the exclusivity of Canadian cities (owing its origin in large part to Canada’s divisive Indian Act4), the category of “Aboriginal/Indigenous/Native” continues to remain meaningful in urban centers. Just how, within an urban context historically defined in opposition to it, Aboriginal group identity not only persists but continues to reinvent itself would appear to be a major site of inquiry with important contributions to make not only to Indigenous studies in Canada, but to cultural studies more broadly as well.

Recent work in the sociolinguistics of diversity and globalization seems well placed to address precisely this question. In an important break with earlier sociolinguistics, language ethnographers, particularly those working in Europe such as Jan Blommaert and Ben Rampton, have called into question once foundational concepts in sociolinguistics, in particular the idea that “fully-fluent” or “native” speakers’ linguistic proficiency serves as the benchmark of clearly identifiable “languages” existing within discrete “speech communities” (see e.g., Blommaert

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4 Canada’s Indian Act is a colonial piece of legislation that has been in effect since the founding of Canada in 1867. The act, which applies only to First Nations in Canada and not Métis or Inuit people, governs numerous facets of Aboriginal life, including economic and political development, education, and identity, and establishes the Canadian government’s fiduciary obligations to Aboriginal people. The original Act was primarily assimilationist and “civilizing,” defining the processes whereby Aboriginal people could become “enfranchised” and legally lose their “Indian status” (e.g., Aboriginal women marrying non-Aboriginal men).
2007; Rampton 2006). Pushing the vanguard of variation sociolinguistics, these authors have turned ethnographic attention to the “superdiversity” that surrounds actual language use in the socially heterogeneous spaces produced by globalization. Real language users, in the course of doing their linguistic business, draw on personal repertoires of linguistic forms that include sets of genres, registers, styles that may range across speech communities and ethno-linguistic variants. Biographical linguistic trajectories replace “mother tongues”; plurality of linguistic resources and speaker repertoires replace “mono-,” “bi-,” or “multilingualism.”

When these older, inflexible speaker-language–variant categories are dispensed with, more nuanced indexical relationships can be identified between linguistic forms, on the one hand, and forms of group membership on the other. This opens new doors for linguistic studies of social life. As Blommaert (2013:1) recently argued, “language” is a particularly “sensitive and immediate index of diversity” as well as “one of the most sensitive and immediate indexes of social change….” Attention to the small details of language usage, offers a privileged entrance into broader and less immediate social, cultural, and political patterns.” The use of different variants in the schoolyard, for example, may map the diverse social groups students belong to. But careful attention to the borrowing, mixing, and merging of linguistic forms reveals, with much greater detail, emergent (and sometimes) transitory practices of group affiliation and/or disaffiliation as school children interact within and across class, nation, and ethnic boundaries. Taking a wider view, different patterns of immigration, different entry points into national labour markets, different social and cultural alliances have brought about social transformations in urban spaces that undermine traditional ethnic, national, and religious categories. Ethnographies of language-use can serve as early indicators of social transformations underway (see e.g., Blommaert & Rampton 2011). Thus, a fine-grained analysis of Aboriginal language-use may provide the kind of insight into emergent forms of urban Indigeneity currently ignored or otherwise invisible. Micro-analysis of the ways in which urban Aboriginal youth from different linguistic backgrounds, for example, speak to one another (and to outsiders) may point towards when, where, and how at least one sector of the urban, Aboriginal community is consolidating their identities as Aboriginal and, in doing so, re-defining (rather than abandoning) “Aboriginal” in ways meaningful to their present realities: as contemporary, but not “not-Aboriginal” for being so.

3 Indexing Aboriginal group membership

While this recent body of work suggests micro-analysis of colloquial, everyday uses of language may be a promising approach for understanding the emergence of new, contemporary urban Aboriginal practices of identification, there are far more evident invocations of Aboriginal life in Canadian cities that may be more appropriate starting points. In Montreal, Aboriginal identities and cultures are much more visible (and accessible for non-Aboriginal researchers like myself) in the relatively frequent public presentations and performances of Aboriginal social life and culture already introduced above. What, if anything, to make of these interactions? Beyond the
performance of identity in unsolicited, colloquial talk, what can language research tell us about the explicit presentation of diversity?

An episode from the late 2013 talk examined in this study is illustrative of the kind of public addresses in question in this paper. It also highlights the options available for using language forms to index Aboriginal group membership. A fairly militant Montreal activist group has asked a young Onondaga woman, Jessica Barnett⁵, to give a talk as part of a panel of five speakers with the purpose of discussing Settler solidarity, or, in other words, how non-Aboriginal peoples can support the Aboriginal peoples’ struggles for justice and self-determination. Following the talks of three other Aboriginal women, Barnett opens by introducing herself in Kanien’kéha. Opening with a self-introduction in a traditional language has become routine feature of these kinds of talks, even if the speakers’ knowledge of the language does not extend far beyond introductory statements. Unique in this interaction is that Barnett borrows Kanien’kéha to do the job rather than her “own” Onondaga language. Kanien’kéha has, of late, undergone sustained revitalization efforts and is now much more accessible than Onondaga (which is down to less than 50 speakers). What follows is a transcription of the English that brackets the Kanien’kéha self-introduction (“M” refers to moderator, “S” to speaker):

Example 1: Speaker Self-introduction

M: S:o our next speaker is [Jessica Barnett
S: [That’s me right?
M: yea
S: ((To moderator)) yea
S: ((Barnett introduces herself with relative ease in Kanien’kéha (14s) ))
S: U::m (0.5s) I was just speaking to y’all in ah Kanien’kéha
which is the Mokawk language
but I actually belong to the Onondaga nation (in) the Western doorkeepers of the Haudensaunee confederacy.
I also belong to the Turtle Clan
and I don’t know my Indigenous name yet (.)
but it’s coming
I’m working on it.⁶

⁵ While the events reported here are public, pseudonyms have nevertheless been given to respect the privacy of the speakers.

⁶ The transcription here and in the second example below follows a simplified version of the “Jeffersonian system.” See Hutchby and Wooffitt (1998) for a basic overview. Pause lengths are shown in parentheses, brief pauses are indicated by a period enclosed by parentheses, square brackets indicate overlapping speech, colons indicate stretched pronunciation, (h) indicates laughter, and finally talk placed inside parentheses represents transcribers best guess at unclear speech.
What groups Barnett’s talk with the others on the panel and the larger class of Aboriginal public speaking events is the explicit effort to relay—across cultural boundaries—Aboriginal traditions, culture, and social issues by those who can claim insider status to it. As “Orientalist” critiques of representation gain traction outside scholarly circles, embodied representatives of Aboriginal life are quickly replacing the anthropologist or social worker as the preferred authority on “all things Aboriginal.” In Montreal, there have been no fewer than 14 events featuring 22 different speakers over a three-month period beginning in January, 2014. While the primary goal of these events is largely educative, they also do diversity. The embodied aspect of the talk by both speakers and audience members (as non-Aboriginal) introduces a performative quality to the talk centered on establishing and maintaining ethnic difference between speaker and hearer, as Barnett’s talk makes clear.

In her case, the use of Kanien’kéha clearly serves as an explicit assertion of Aboriginal identity. It is a rather straightforward example of what Jocelyn Ahlers (2006), in her study on “the public use of Native American Languages by non-fluent speakers,” called a “Native language identity marker” (NLIM). NLIM markers function primarily pragmatically rather than referentially. As Alhers (2006:58) explains, the use of NLIM “creates a discourse space in which a subsequent English speech event is understood by audience members to come from, and be informed by, a Native identity.” While Alhers’ study focused on communicative events involving Native speakers and audience members, her call for foregrounding the pragmatic value of NLIMs is all the stronger in intercultural speaking situations. Barnett’s introduction not only signals her Aboriginal identity, it also marks her difference from the primarily non-Aboriginal audience gathered who have little if any understanding of Kanienkéha’ka.

The use of NLIM in public addresses gives evidence of new spaces for the expression of Aboriginal languages (and a radically re-envisioned function). However, from the approach generally carried out in contemporary sociolinguistics of diversity discussed earlier, its use in speech events where the Aboriginal identity of the speaker is central and established ahead of the event (e.g., in the event announcement and speaker introduction) may seem fairly self-evident. The focus of this work has been in large part concerned with cultural transgression, newness, and mixing, those fleeting moments of cultural identification that confound (rather than reinforce) inherited social categories. If language does indeed provide a powerful lens into changing social and cultural patterning, it’s unsurprising that sociolinguistic work on diversity has given preference to the more ephemeral moments of identification that occur in the quick of spontaneous talk rather than self-conscious, explicit cultural statements. Rampton and Blommaert (2011:6) put it in the following way:

[R]esearch … has to address the ways in which people take on different linguistic forms as they align and disaffiliate with different groups at different moments and stages. It has to investigate how they (try to) opt in and opt out, how they perform or play with linguistic signs of group belonging, and how they develop particular trajectories of group identification throughout their lives.

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It’s a fair question whether these kinds of intercultural presentations tell us much about how Aboriginal culture is “really” taking shape in Canadian cities. The code borrowing in Example 1 serves as a pretty clear instance of how language-users draw on the linguistic resources at hand to opt in to a particular group (and opt out of another). But in the context of an explicitly Aboriginal public talk addressed to outsiders, they may seem somewhat artificial and, in any event, not where the real action is.

4 Staging difference

Barnett’s need to borrow a code to identify herself, however, is emblematic of a more general reality of urban Aboriginal Canada, one that is an outcome of Canada’s colonial relationship with the Aboriginal populations inside its borders and that complicates applying the superdiversity framework for understanding the making of contemporary, urban Aboriginal identities. The urban Aboriginal community is made up of various different nations with a variety of linguistic heritages. Aboriginal people have also taken different routes to the city and have different experiences within both Aboriginal and urban communities. Some may have just arrived from remote communities. Others, because of colonial adoption policies, may have just discovered their Aboriginal heritage. Colonial policies have worked to splinter Aboriginal peoples to such an extent that the shared linguistic forms that might serve as indexical of collective Aboriginal belonging in urban spaces are not necessarily available for all the people who claim to be and are identified as Aboriginal. While any Aboriginal language-use might serve as means for opting in, opting in may likewise occur through self-affirmation, without the need for any indexical associations (including visual cues). Indeed, in the case of the example above, Barnett’s Aboriginal status was already well secured before a word of Kanien’kéha was ever spoken.

But that the production of group identity and group membership exists apart from shared indexical forms does not mean that understanding urban Aboriginal group formation is not a job for language researchers, even if linguistic repertoires no longer appear to be of primary concern. Rather, it is in this context that the doing of cultural distinction (done, at least in part, linguistically) seems all the more worthy of careful attention. Turning our attention to the language of difference-making requires a shift in inquiry away from ethnographic description of the speaker—their trajectories, their practices of identification, the groups they belong to, and so on—and towards descriptions of the possibilities and constraints of presenting and valuing difference in particular situations. As cities become increasingly diverse, intercultural recognition becomes an ever more important force in shaping how cultural difference is lived. In city spaces dominated by a history of Aboriginal marginalization, just who you can be as an Aboriginal person (and how) is necessarily a relational, cross-cultural achievement. Apart from looking “inside” nameable social groups, research into points of contact where recognition is sought out and conferred is increasingly crucial. The urgency is with the “when,” “where,” and “hows” of

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7 Throughout the 1960s the Canadian Government facilitated the adoption of Aboriginal children by non-Aboriginal parents. The practice is often referred to as “the 60s scoop.”
cultural difference-making, rather than the “what” of cultural particularity. Moreover, as it concerns Aboriginal populations in Canada, such an approach may be more appropriate: for communities who have suffered from the role of Western knowledge in the colonial project, continued inquiry into “who” Aboriginal people are (or are becoming) is likely to be met with suspicion or animosity. Instead, what may be in fact more pressing is trying to determine how “Aboriginal culture” is enabled in the ways we, as both Aboriginal and non-Aboriginal, collectively organize to recognize it.

There is already a rich tradition of scholarship taking up the staging of cultural identity. Public exhibitions of culture have often criticized for their inauthenticity and for oversimplifying cultural difference. The glass-box of the museum and the white walls of the art gallery, for example, have been routinely charged with inviting voyeuristic responses to Aboriginal culture. Museums, by their very function to collect and display, tend towards exoticization and risk reducing complex cultures into artefacts to be salvaged, not political forces shaping our contemporary realities (see, Ames 1992, Karp 1991, Nelson 2006). The display, circulation, and marketization of Aboriginal art have been brought about by the diligent, egalitarian ethos of art curators who have lobbied to put Aboriginal art on the same footing as Western art; the slogan here being “Art without adjectives.” However, the notion that Aboriginal art should be judged “in its own right”—that once hung on the gallery wall it should transcend culture and history in search of the sublime—masks the particularity of Aboriginal ways of valuing/using the aesthetic (Fisher, 2012) and enfolds Aboriginal art into a characteristically Western propensity to universalize (and render superior) a very exclusive cultural milieu (see also, Marcus & Myers, 1995; Myers, 2013).

The question here is to what extent do intercultural public talks continue or escape these earlier frames of interaction? Anthropologists such as Fred Myers (1991, 1994, 2013) and James Clifford (1988) have done quite significant work in drawing attention to what Myers calls “the rules of the production and reception” of cultural difference as it concerns the art world and museum curation (Myers 1994:679). Here sociolinguistic work can play an important role extending and deepening this work, establishing the rules of the production and reception of cultural difference as they are realized in the public talk, the most recent iteration of a tradition of staging Aboriginal culture for non-Aboriginal consumption. The task requires the delicacy that discourse analysis can provide. By affording opportunities for Aboriginal peoples to “speak back” directly to a colonial society that has long-denied them a voice, the public talk clearly cannot be dismissed out of hand as yet another instance of cultural objectification and commodification. Intercultural performances of Aboriginal identity necessarily enter into pre-existing practices of exchange, but that does not preclude speakers’ use of these practices to new and creative ends.

Following Clifford and Myers, the intercultural public speaking event can be seen as a kind of action that participates in ongoing practice of intercultural expression and recognition. Careful attention to the language forms used (whether in English, French, or Kanien’kéha) can shed light on the nature of the discourse practices: To what needs and expectations do these addresses respond? How do these obligations shape the ways the communication proceeds? In
turn, how does the genre of the intercultural address shape the “looking relations” and intercultural relationships realized in the interaction? Finally, how do Aboriginal speakers manage the obligations of the events and pursue the possibilities they afford?

5 Towards a rhetoric of difference-making

The second example below brings out the situational delicacies of the intercultural address. The transcript is of an event where the speaker’s speaking position becomes a particularly sensitive matter. The interplay between the obligations of the discourse practice and how these obligations are met in actual talk is dramatically demonstrated in the three segments of the talk transcribed below. The implications of the intercultural public speaking event for the ways cultural boundaries and intercultural relationships are constructed in these kinds of talks are particularly evident. The speaker is Rita Norton. Her talk was part of an environmental awareness campaign targeting the tar sands in northern Alberta organized by a US environmental action group. Environmental activism has done much to increase the public profile of and interest in Aboriginal communities. As the litany of abuses against Aboriginal people grows, the environmental movement has found a valuable ally. Aboriginal communities are often the first affected by industrial development, and the string of injustices Aboriginal people have faced throughout history hastens the urgency of the preservationist message. About 100 people came to the event. Although not particularly well known, Norton was the primary draw for the event and given twice the speaking time as the other two (non-Aboriginal) presenters. Norton belongs to a Northern Alberta Cree First Nation whose community has been directly impacted by the pollution generated by the tar sands industry. In 2008, leadership in the First Nation launched a daring legal action against the Albertan and Canadian governments, arguing that tar sands development within their traditional territory is a violation of their Treaty 6 rights. The event was organized in part to raise funds to support the lawsuit. In the promotion that circulated for the event, her talk was promised to “awaken the audience to the … realities” of her community.

A number of notable features of the talk jump out from the transcripts. Here, however, I wish to focus attention on her efforts to locate her deitic center as she undertakes this awakening work and the eventual trouble she finds herself in locating just whose voice she is representing. The segments are of three different episodes of her talk. The first comes from very early in her talk and is typical of the “awakening” work she did throughout. In the second segment, taken from about mid-way through her presentation, she states a position on oil sands development. And in the third segment she is questioned about this position during the Q&A (“S” refers to speaker and “Q” to questioner).

Example 2: Locating the Principal in the Intercultural Aboriginal Public Talk

Segment 1
S: And in return we would share the land because in our language there literally is no word for ownership of land, we do not have that because when you literally translate that ownership to own land it it really comes out in the literal English translation is you cannot own your Mother. Our mother is the one who gives us life and nurtures us. So you cannot own her. But we can share what our creator has given us, that’s what the old people said.

Segment 2

S: Thus you know save all human beings you know taking on this fight that’s gonna um ultimately protect us all ah you know and what this litigation said was you know we’re not saying “shut down the tar sands.” You know what we’re saying is you know the bitumin is there it’s not going anywhere let’s slow down here. You know let’s take a step back and reassess what’s going on here and ah and so they did that and ah…

Segment 3

Q: Um thank you for your talk. Um I would like to just clarify one emm one aspect to make sure I understood. You said something about not wanting to say that ah you’re not saying to shut down the tar sands. Is there a reason why you would not want to say that?

S: Shit ((spoken under her breath but still in the microphone and loud enough to be heard by the audience; audience begins to laugh)) (1s) um (4s) ((Norton is smiling; laughter in the crowd progressively increases)) um ((throat clearing, laughter tapers off)) (1s) S: my personal opinion and that opinion of my leadership and my nation as a whole and our people as a whole are all different. So (. ) that question is very unfair to ask me(h) which is why I I just won’t answer it because um like I said I don’t represent my nation, I don’t represent my leadership I represent my children and me as a citizen member of my community
Bitzer (1968:6) defined “exigence” as the “thing which is other than it should be” and which can be put right through discourse. It is helpful here for situating the underlying purpose or motivation driving the discourse and its reception in the event itself (rather than the speaker’s will or as a cultural characteristic, see also Paré 2014). Clear from the promotional material discussed above, the audience has been convened to rectify a knowledge deficit concerning the impacts of the tar sands on Aboriginal communities. Her talk has been occasioned by a need to bring the audience from a state of low knowledge to higher knowledge (or to awaken them from their dormative state). This socially determined exigence has implications for the talk itself. For Norton to meet the exigence, she must speak declaratively and she’s obliged to make her community the “principal” of her talk—the person or people whose beliefs and positions are told “by the words that are spoken” (Goffman 1981:181). Thus, the first segment is fairly typical of the talk as a whole. The “you” in this segment is universal, but the “we” indexes the descendants of Cree speakers whose beliefs have been shaped by the Cree language. The second segment continues this pattern, “we” indexing the community members behind the lawsuit. 

But the question asked in the third segment breaks this pattern. The request for clarification: “You’re not saying to shut down the tar sands. Is there a reason why you would not want to say that?” refers back to the line “you know we’re not saying ‘shut down the tar sands’” transcribed in the second segment. Norton’s “we” is shifted to the questioner’s “you.” Likewise the principal shifts from the community (in segment 2) to Norton herself (or a conflation of the two together). The shift, along with Norton’s clear meta-awareness of her own speaking position, puts her in a bind. She risks, on the one hand, misrepresenting her community’s interests and, on the other, finding herself at odds with an environmental movement which has gathered to hear her speak.8 Her meta-talk in the third segment illustrates well the difficulty she faces extricating herself from her predicament. She states that as a representative of her community, she’s not at liberty to speak freely (but could outside the context of the public talk in a private conversation) but goes on to entreat her audience to understand that as just one member of her community, she only represents her own voice and the voice of her children. Even after the qualification given,

8 The environmental group behind the event calls for a “fossil-free” future while Greenpeace calls for the stopping of the tar sands (see http://www.greenpeace.org/canada/en/campaigns/Energy/tarsands/).
Norton does not risk voicing her own opinion, suggesting that in the end the assigned principal in the intercultural public talk, the community or culture, wins out.

This exchange is enlightening because it brings to the level of explicit reflection within the event itself the rhetorical structure that surrounds it. The ambivalence around speaking position and the meta-talk it provoked is not unique to Norton’s talk. The tendency to fold all Aboriginal culture into the speaker is something many Aboriginal speakers explicitly flag in their presentations. Choosing who gets to speak can play politics in Aboriginal communities, and speakers are often cognizant of the political nature of the act of giving a public talk. Spaces for recognizing Aboriginal culture are necessarily spaces for conferring value on it as well. Public talks are occasions for assigning what and who should be valued. In her talk, Norton is tasked with having to reconcile Cree culture as something the environmental movement ought to appreciate (having no language to express ownership of land) with the reality that Cree people are like all people: they debate, hold various opinions, negotiate present circumstances, and, sometimes, believe in a future that includes oil and gas development. To what extent are the representational quandaries inevitably tied up with the discourse genre of the public talk? In what ways can speakers distance themselves from the politics of the organizers? What pressures are placed on speakers and audience members when identity and authority presume the other?

6 Conclusion

The analytical effort when researching the situation of intercultural interaction is not a critical one, at least not in the regular sense of the word. Rather the goal is to describe as completely as possible the ways talk attaches itself to the course of events which has invited the talk and which the talk helps realize (McDermott 1988). Ethnographies of communication in the tradition of Dell Hymes (1974) are important starting points here as they have been contemporary ethnographers of language and diversity. However, to continue the work of Clifford and Myers, the functional language form that ethnographies of communication reveal need to be understood, not simply as characteristic of social groups, but responding rhetorically to the social activity of which the communication is a part. Here recent work in rhetorical genre can serve as a useful complement to arsenal developed in linguistic anthropology (e.g., Bawarshi and Reiff 2010, Devitt 1993, Miller 1984).

The Aboriginal public intercultural address is, as I said earlier, an important avenue for Aboriginal people to speak back to Settler society. But they clearly carry their own political implications. What I’ve tried to do in this paper is suggest an approach to researching cultural diversity that is not too concerned with what actually constitutes the cultures under study. One advantage for a researcher like me, a non-Aboriginal white male, is that taking the focus off culture and/or the identities of my participants reduces the concerns around ethno-centric projections of cultural minorities. Instead, as we see in Norton’s talk, issues around cultural authority, representation, and reification become part of the study itself. Vitriolic comments have been circulating around the web about Barnett being a “fake Indian.” Her borrowing of Kanien’kéha might serve either side of the debate. But in many ways, it’s not a debate for
cultural commentators to enter into. Language ethnographers like Blommaert and Rampton and many others have shown the tremendous complexities in the ways groups actually form and reform on the ground. One of the consequences is that just where group boundaries lie is forever receding from view. On the other hand, cultures, ethnicities, races, genders are made to have meaning all the time. By turning attention away from the participants and towards the situations and social activities in which cultural diversity is done, sociolinguistic research has important contributions to make in unearthing processes in which groups are both negotiated and consolidated.

7 References


Encoding Contrast, Inviting Disapproval: The Place of *Ata* in Belizean Kriol

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1 Introduction

This paper investigates the semantics and pragmatics of the discourse marker *ata* in Belizean Kriol, as seen in (1). I show that *ata* is an adversative discourse marker similar to the Spanish discourse marker *si*, as described in Schwenter (1999, 2002), and that the two share much in terms of syntax, semantics, and pragmatics. This is interesting, as there seems to be no English counterpart to the Kriol *ata* or Spanish *si*.

(1)  
A: Wai yu nak yu sista?  
B: **Ata** da shee nak me fos! [KID]  
A: Why did you hit your sister?  
B: **(But)** it was she who hit me first!

In terms of *ata*, I argue that it is used to convey an emphatic contrast with the immediately preceding discourse and that this contrast is a conventional implicature of the type described in Grice (1975). In addition, it is frequently used in conveying negative attitudes toward the preceding discourse. I argue that this is not a conventional aspect of *ata*’s meaning but that it is instead calculated in context via Gricean pragmatic reasoning as a conversational implicature. Finally, I suggest a diachronic origin for *ata* in the Kriol focus marker *da*. This present account of *ata*, then, covers significantly different ground than the account given in Salmon (to appear).

In the next section, which follows from Salmon (to appear), I provide a brief background on the Kriol language as well as a discussion of where and how the data used in this paper were collected.

1.1 On Belizean Kriol

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1 Many thanks to the audience at the University of Minnesota Institute of Linguistics where this paper was presented in January 2014. Thanks also to Eve Sweetser, Martina Faller, and Michael Ellsworth for very helpful comments in the question and answer session of the BLS presentation.

2 The spelling system used in this paper was proposed for Kriol by members of the Belize Kriol Project in 2002. The orthography is completely phonetic, with each symbol representing only one sound. See Decker (2005) for discussion and history. Sometimes it is necessary to provide interlinear glosses for the Kriol examples, and in these cases I have done so. When the translation to Standard English is straightforward, though, I omit the glosses in the interest of brevity.

3 Following Schwenter (1999) and the dilemma for glossing adversative discourse marker *si* in Spanish, which similarly has no direct English counterpart, I will leave *ata* unglossed in later examples.
Belizean Kriol is an English-based creole spoken in the Central American/Caribbean country of Belize. It is sometimes considered to be the language specific to the Creole people there—those of Afro-European descent—but this is not correct, as many Belizeans speak Kriol and do not consider themselves to be Creole, and the language has become something of an unofficial lingua franca across the country. Though the official language is English, most Belizeans of all races and ethnicities can speak Kriol with differing degrees of proficiency. There is also a strong movement underway by the Belize Kriol Project and National Kriol Council of Belize to promote the language and culture in the country. To this end, there is a dictionary of Kriol (Kriol-Inglish Dikshineri) which defines many Kriol words and gives a brief grammatical description. There have also been more in-depth descriptions of the grammar, in Young (1973), Greene (1999), and Decker (2005). There is also a limited literary tradition written in Kriol as well as a weekly newspaper column in The Reporter, of Belize City.

1.2 Research Methods

I consulted 20 speakers of Belizean Kriol, with half of the speakers residing in Belize City and half from Punta Gorda. The paper was a work in progress while I was in Belize, so the information I gathered from early consultants helped me to sharpen my questions to those I interviewed later. As such, I did not receive 20 grammaticality judgments on each piece of data. However, I did make sure to test each piece of data with several speakers, gathering at least 5-10 judgments for each piece of data, and as many as 15 for others.

The consultants were of both sexes, and various ages, with the youngest being 18 and the oldest consultants being three women between the ages of 70-80. I also consulted several men in their 30s and 40s. Some of the speakers were bilingual with English and Kriol, and some reported speaking only Kriol.

The data I use in this paper are of several kinds: There is directly elicited data concerning specific questions about the lexical items bot and ata, as well as recordings of conversation and unplanned discourse that I made in Belize City and Punta Gorda in January 2013. I have also made use of the Kriol-Inglish Dikshineri, which is published in cooperation with the Belize Kriol Project and Belize’s Ministry of Education. Examples taken from this work are tagged throughout the paper as “KID”. In addition, I have modified several example sentences from KID from unrelated dictionary entries as a means of testing acceptability intuitions among speakers of Kriol.

2 Bot and Ata: Empirical Descriptions

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4 See Escure (1997: 28-39) for a sociohistorical outline of Belizean Kriol, and suggestions as to the putative origins of Kriol in contact between Africans, Europeans, and Miskito Indians in the 18th and 19th centuries.

5 Much of the work of these two organizations can be seen at the following web site: <http://www.kriol.org.bz/>. 
There has been little prior work on *ata* in the linguistics literature, with the exception of Salmon (to appear), which is the source of much of the empirical coverage provided in the present paper. We begin with a brief empirical look at *bot*, which is very close to English *but*, and which is the closest thing possible to an English translation of *ata*.

## 2.1 Bot

*Bot*, which is pronounced [bot], or sometimes [bɔt], is very similar to English ‘but’ in many of its syntactic and semantic properties. Like *but*, *bot* is polyfunctional, though the two are not identical, as I will show below.

Consider (2), with *bot* in initial position of the second clause in each sentence. In both examples, *bot* translates transparently to English as standard usages of *but*. Essentially, *bot/but* here conjoins two clauses and conveys that the second clause is somehow in contrast with the first clause.

(2) Hihn da-mi wahn shaat man, **bot** ih mi fat ahn schrang tu.
    he was a short man but he PAST fat and strong too

‘He was a short man, but he was fat and strong, too’. [KID]

In addition to the conjunctive examples, we also find the exceptive, prepositional use of *bot*, which compares to the common usage and syntactic configuration of English *but*. The Kriol sentence in (3) is perfectly acceptable, as is its English translation.

(3) Mi ma mi wap all a wi **bot** mi lee breda.
    my mother PST punish all of us but my little brother

‘My mother punished all of us but my little brother’. [KID]

The corrective use of *bot* in (4) was also accepted by my Kriol consultants in the given context.

(4) [Context: You ordered juice, and the waiter brought you Coca Cola by mistake.]
    Ah noh waahn Coke, **bot** joos.
    I don’t want Coke, but juice’.

Another similarity shared between *but* and *bot* is that both are awkward to contemporary speakers in adverbial uses. For example, in (5a) we see the adverbial use of *bot* to mean ‘only’. My consultants rejected this as extremely awkward, and suggested correcting it with *oanli* ‘only’ as in (5b).

(5) a. #Georgiana da-mi **bot** ten yaaz oal.
    ‘Georgiana was but ten years old’.
b. Georgiana da-mi **oanli** ten yaaz oal.

This is not surprising, however, as this is an archaic, idiomatic usage of *but*, which sounds awkward to the native American English speakers that I polled as well, and Biber et al. (1999: 81) note that this adverbial use of *but* is heavily restricted by context.

More interesting for the purposes of this paper is the appearance of *bot* in sentence- and utterance-initial position, in which it relates the *bot*-sentence to some aspect of the preceding discourse. Consider (6), in which the speakers are reminiscing about their old neighborhood [from Greene (1999: 211)]. Here we see speaker B using *bot* to mark a contrast with something implied by speaker A’s statement. That is, speaker A describes how the *y* used to be punished as children, and speaker B intends her statement to contrast with an inference of this: namely, that if one is punished then one will cease to get into trouble.

(6)  
B: **Bot** dehn stil get chroble, speshali Pati.  

A: Brother Luke used to live there too, because when he used to get in trouble, they used to smack their hands with a ruler.  
B: But they still got into trouble, especially Patty.

This sentence-initial, discourse marking *bot* in (6) compares directly to what we will see below with *ata*, which is required to be sentence-initial. *Ata* differs, though, in that it has a more specialized semantics than *bot* and that it occurs only in casual speech. Let’s take a closer look at *ata* now.

### 2.2 *Ata*

My Kriol consultants generally pronounce *ata* as ['ata], with primary stress on the initial syllable, and without aspiration on the medial but syllable-initial [t]. The initial vowel often seems to be lengthened as well, and there is generally no pause separating the discourse marker from the sentence that hosts it. In general, *ata* seems to be found only in spoken, unplanned speech (Ochs, 1979). It is common to find examples of sentence-initial, discourse marking *bot* in written form, but I have been unable to find *ata* outside of casual speech. Several of my consultants remarked that they would only use *ata* in informal situations; otherwise, they would feel more comfortable using *bot*.

The *Kriol-Inglish Dikshineri* (2007: 31) has a single entry for *ata*, which is given in full below in (7).

(7) **ata** conj. but. (Generally denotes bad attitude.)
As I will show below, *ata* is much more restricted syntactically and pragmatically than *bot* is. *Bot* can replace *ata* in all cases, but *ata* cannot replace *bot* in all cases. Also, I will show that use of *ata* doesn’t necessarily require a bad attitude, as the entry quoted in (7) suggests. Rather, speakers use it to mark an emphatic contradiction with the immediately preceding discourse. As a result, it is not surprising that *ata* would seem to denote a bad attitude, as in moments of emphatic contrast speakers are often negative or confrontational. I will argue below, however, that this emotive message is not conventionally encoded but is instead derived pragmatically, resulting in a relatively minimal semantics for *ata*.

Another important fact about *ata* is that it appears only in sentence-initial syntactic position. In my conversations and recorded data with consultants, all of the tokens of *ata* that I have are in sentence-initial position, used in an immediate response to a previous speaker. For example, consider (1) again from above, in which *ata* is sentence-initial in B’s response to A, and in which *ata* is used to contradict a contextual inference generated by A’s question: B takes A to imply that she is somehow unjustified in hitting her sister.

(1)  A:  Wai yu nak yu sista?
     B:  Ata da shee nak me fos!

     A:  Why did you hit your sister?
     B:  ATA it was she who hit me first!

Similarly, in (8), which is part of my recorded data, *ata* appears in initial position. Here, two men were talking about their plans to have met on the previous day at a gas station in Punta Gorda. There was some miscommunication, however, and the two failed to connect.

(8)  A:  Yu da rong gyas stayshan!
     B:  Ata no da-mi rong stayshan yesideh!

     A:  You (were) at the wrong gas station!
     B:  ATA (I) was not (at) the wrong station yesterday!

A similar use occurred later in this same conversation, when another man walked up and joined the men already there. One man asked the newcomer what he had done on the previous day. The newcomer responded that he was at home, but this didn’t match with what the first speaker believed, so he objected to the newcomer’s claim, using *ata*, and so marking a contrast with the newcomer’s assertion and with what he had believed about the newcomer previously.

(9)  A:  Wat yu deh gwaahn yestudeh, mayn?
     B:  Yestudeh da-mi hoahn.
A: Ata ai si yu yestudeh! Ai si yu yestudeh bai Braddick! Rait?

A: What did you do yesterday, man?
B: Yesterday I was at home.
A: ATA I saw you yesterday! I saw you yesterday by Braddick’s! Right?

The tokens in (8) and (9) were taken from recorded, unplanned speech, and are sentence-initial. In addition to this recorded data, I also tested my consultants directly with respect to the possibility of *ata* in sentence-internal positions that I constructed. To do so, I took grammatical *bot*-sentences from KID, and replaced *bot* with *ata*, as in (10) and (11).

(10) #Hihn da-mi wahn shaat man, *ata* ih mi fat ahn schrang tu.

he was a short man but he past fat and strong too

‘He was a short man, **ATA** he was fat and strong, too’. [KID]

(11) #Yu di play bembeh *ata* Ah noh frayd fi yoo

you pres.prog pretend tough but I not afraid of you.**EMPH**

‘You’re pretending to be tough, **ATA** I’m not afraid of you’. [KID]

For each of these sentences, I asked my Punta Gorda consultants if the sentence would be acceptable. The response was negative.

I also tested adapted sentences using *ata* in place of exceptive and corrective *bot*, as in (12) and (13), and these were judged to be unacceptable.

(12) #Mi ma mi wap all a wi *ata* mi lee breda.

my mother pst punish all of us but my little brother

‘My mother punished all of us **ATA** my little brother’.

(13) [Context: You ordered juice, and the waiter brought you Coca Cola by mistake.]

#Ah noh waahn Coke, *ata* joos.

I don’t want Coke, **ATA** juice’.

Similarly, I tested *ata* in a sentence where it should mean ‘only’, akin to (5) above. This was also found to be unacceptable, as in (14).

(14) a. #Georgiana da-mi *ata* ten yaaz oal.

‘Georgiana was **ATA** ten years old’.

b. Georgiana da-mi *oanli* ten yaaz oal.
In all of the sentences tested above, *ata* falls in sentence-internal position and is found to be unacceptable.

I also tested *ata* in clause-initial position, but immediately following a vocative address, as in (15). This too was not accepted.6

(15) A: Ai mi tink yoo bai di groasriz!  
B: #Luis, *ata* Ai bai di rom!  
A: I thought you bought the groceries!  
B: Luis, *ATA* I bought the rum!

It seems clear that *ata* strongly resists appearing in sentence-internal positions—even if those positions are clause-initial within the sentence. In this way, *ata* differs significantly from *bot*. *Ata* also differs from *bot* in that its semantics encode an emphatic contrast to the immediately preceding discourse and that it must appear in a dialogic or multi-speaker situation. *Bot* encodes contrast, but it clearly lacks the additional requirements of *ata*, as *bot* can be perfectly felicitous in sentence-internal, monologal speech. Thus, part of what *ata* encodes conventionally is information about the kinds of contexts in which it appears.

A very clear comparison here can be seen with the constructions Fillmore, Kay, and O’Connor (1988: 506) argue to have “pragmatic point”. Fillmore et al. describe pragmatic point as follows:

> We find that in many cases idiomatic expressions have special pragmatic purposes associated with them. A large number of substantive idioms have obvious associated pragmatic practices (e.g. *Good morning*, *How do you do?*, *once upon a time*) […]. *Him be a doctor?*

The final construction mentioned here by Fillmore et al. is referred to as a Mad Magazine Sentence (MMS) in Akmajian (1984) and Lambrecht (1990, 1994). Like *ata*, it encodes information about the kind of pragmatic situation in which it must occur. The MMS must be uttered as a response to a dubious assertion or presupposition, and it generally requires a rising intonation. In other words, a second speaker has to have said something about “him” becoming a doctor, and this proposition has to be considered dubious or unlikely by the person who responds, as in (16B).

(16) A: I think John will be a great doctor someday.  
B: Him be a doctor?!  

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6 This exchange was accepted only when there was a lengthy pause inserted between *Luis* and *ata*. This has the effect though of fully separating the vocative and *ata*, resulting in a sentence in which *ata* is still sentence-initial.
B cannot simply use the construction out of the blue—she must be responding to the speech of a second person. This situational dependency and specific pragmatic purpose are what Fillmore et al. are concerned with when they discuss a construction as having pragmatic point, and this is very similar to what we see with *ata*, which must be used to respond to and contradict some aspect of the immediately preceding discourse. Like the MMS, *ata* has a *Hey, wait a minute!* feel to it. Both constructions are dialogic and must appear in a dialogue or multiparty exchange. This is also consistent with Fraser’s (2006: 197) description of various other discourse markers that require at least two speakers for felicitous use. Consider (17), which is Fraser’s (26a), and in which use of *on the contrary* as a DM seems to require at least two speakers, with speaker B responding to speaker A.

(17)  

a. Fred is a nice guy. *On the contrary, he is a boor.*  
b. A: Fred is a nice guy.  
B: On the contrary, he is a boor.

We can see then that *on the contrary*, the MMS, and *ata* are strongly interactional in that they are all used to respond to context and at the same time to create context. I am claiming especially for *ata* that this translates to a licensing requirement that is conventionally associated with the word itself.

### 2.3 The Meaning of *Ata*

As we have seen thus far, *ata* marks an emphatic contrast with some aspect of preceding discourse. I will argue that this content is conventional, semantic meaning, but that it is non-truth conditional meaning, and as such, that this contrast meaning should be analyzed as a Gricean (1975) conventional implicature in much the same way that the contrastive element of *but* is often described.\(^7\)

There have been many, many accounts given over the years of the meaning of *but*, which differ in everything from theoretical framework to empirical claims about what *but* means in the first place. As such, I cannot review all of them here.\(^8\) For the purposes of this essay, I am

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\(^7\) In this paper I am concerned only with Grice’s original conception of conventional implicature. Since Grice’s description of this class of meaning, it has been given at least two reinterpretations, for example, in Karttunen and Peters (1979), and more recently in Potts (2005). These reinterpretations fundamentally alter Grice’s category, and generally make different empirical predictions than does Grice’s original description. For example, Potts (2005) does not consider Grice’s data such as *but* as a conventional implicature device at all. See Salmon (2011) and Horn (2013) for arguments against Potts’s (2005) system and in favor of Grice’s original arrangement of the category, especially for the kinds of data with which Grice was originally concerned.

\(^8\) See, for instance, Biber *et al.* (1999), Huddleston and Pullum (2003), Hall (2004), and the many sources therein. Toosarvandani (to appear) provides a very clear and recent discussion of the semantics of the counterexpectational, corrective and opposition uses of *but* as well as a landscape of prior semantic and pragmatic accounts of the conjunction.
assuming a roughly Gricean understanding of but, which is common in the semantics and pragmatics literature.\footnote{See reference works in the Gricean tradition such as Levinson (1983: 128), Horn (2004: 4) and Huang (2007: 54) for verification of this. There are dissenters, though, such as Bach (1999), who is strongly Gricean, but who believes that conventional implicatures do not exist and are an unnecessary complication of Grice’s framework. Similarly, in the semantic-pragmatic framework of relevance theory, conventional implicature, as Carston (2004: 633) writes, “simply does not arise”. In relevance theory, conventional implicature devices are generally analyzed as “encoding procedural constraints on the inferential processes involved in deriving conversational implicatures”. See also Blakemore (2002: 45-48) and Carston (2002: 108) for discussion of conventional implicature meaning from the perspective of relevance theory.}

Grice (1975: 25-26) argued that but shares the same truth conditions as and, which is essentially that of logical conjunction. In addition, but also conveys a conventional implicature (CI) of contrast, which is conventional, semantic meaning, but which does not affect the truth conditions of a proposition containing but.\footnote{See Levinson (1983: 128), Horn (2004: 4) and Huang (2007: 54) for succinct definitions of conventional implicature. Also, Horn (2013) provides an extended history of the concept, tracing it at least to Frege’s Der Gedanke ‘The Thought’ (1918).} Essentially, (18a) has the same truth conditions as (18b) and (18c). However, (18a) and (18b) differ in that (18a) conveys the CI given in (18d) in addition to the logical conjunction of (18c). The meaning in (18d) is conventional, semantic meaning, but it does not affect the truth conditions of (18a).

\begin{enumerate}
\item He is poor, but he is honest.
\item He is poor, and he is honest.
\item \[\text{he is poor} \land \text{he is honest}\]
\item CI: \textit{There is some contrast between being poor and honest.}
\end{enumerate}

Thus, but has a multidimensional semantic meaning, with one dimension being truth conditional and the other being a non-truth conditional statement of contrast.

The contrastive component of ata’s meaning is similar. Ata is used to signal a contrast with some aspect of preceding discourse, but it does not change the truth conditions of its host sentence. Thus the contrast is part of ata’s semantic, lexical meaning, but it is non-truth conditional. This was tested with a written questionnaire with my Belizean consultants, described below in discussion of examples (19)-(20).

I addressed the question of ata’s truth conditions by arranging sets of test sentences such as (19a-c) below, which consist of an ata sentence, its bot counterpart, and then a third sentence with no discourse marker. I included all three sentences on a sheet of paper, and then asked my consultants if they could think of a scenario in which (19a) would be true, but (19b) or (19c) would be false.

\begin{enumerate}
\item \textbf{Ata} da shee nak me fos!
\item \textbf{Bot} da shee nak me fos!
\item Da shee nak me fos!
\end{enumerate}
‘(But) it was she who hit me first!’

My consultants agreed that there was no difference in the kind of event described. All three of the sentences make a claim about who hit whom first. The ata sentence in (19a) was also commonly described as being more likely to occur in an argument, or in a situation in which the speaker feels as if she is being blamed unfairly, etc.

Another set of sentences I used is seen in (20a-c).

(20)  
  a. Ata yu neva tel mi tek owt di chrash.
  b. Bot yu neva tel mi tek owt di chrash.
  c. Yu neva tel mi tek owt di chrash.

(But) you never told me to take out the trash’.

My consultants agreed here too that the sentences in (21a-c) could all be used to describe the same event, similar to what we saw in (19). The ata-sentence here seemed to express surprise, as if someone had unfairly chastised the speaker for not taking out the trash.

Example (21) works in a similar fashion. Speaker A accuses B of stealing something, and B retorts in anger and surprise in (21a) that it was actually speaker A who has stolen it.

(21)  
  A: Wai yu teef dat?
  B: a. Ata yoo du it!11
       b. Bot yoo du it!
       c. Yoo du it!

A: Why did you steal that?
   B: (But) you did it!

The central claims of these sentences do not change with the change in discourse marker, and this is a strong argument that ata does not make a truth conditional contribution.

What ata does do, I am arguing, is signal an emphatic contrast with the preceding discourse, which is analyzable as a Gricean conventional implicature. Since the emphatic contrast is a conventional part of ata’s meaning, it should not be cancelable or defeated in contexts in which it is not supported. We can find evidence that this is so quite straightforwardly. Consider (22), in which a waitress brings a bottle of water for a customer. With the waitress’ sentence, she implies that the water is all that the customer will be drinking. The customer isn’t sure if he wants more than just water or not: he might want coffee too, but he isn’t sure yet. So, he can use bot to indicate a mild contrast with the conversational implicature conveyed by the

11 Kriol has emphatic forms for many of the personal pronouns, which differ from the unmarked default forms. For example, all of the left-side forms are reserved for emphatic use: yoo/yu ‘you’, Ai/Ah ‘I’, shee/ih ‘she’, mee/mi ‘me’, etc. These emphatic pronouns seem likely candidates for Gricean conventional implicature analyses as well.
waitress. However, in this neutral, non-emphatic context, it is very odd for him to respond to the waitress with *ata*.

(22)  [Ordering in a restaurant.]
Waiter: Yu aada waata, rait?
[Customer thinks about it for a second, and then speaks slowly.]
Customer: {#Ata/bot} maybi Ah waahn kaafi tu.

Waiter: You ordered water, right?
Customer: But maybe I want coffee too.

We see, then, that the context needs to support an emphatic contrast in order to license the use of *ata*. If it does not, then *ata* is infelicitious. This is consistent with my claim that *ata* encodes emphatic contrast. On the other hand, if emphatic contrast were not conventionally encoded, we would expect it to be rejected in contexts such as (22) which do not support it.

What about the emotive “bad attitude” of *ata* as described in the dictionary entry above in (7)? We saw in the survey examples of (19)-(21) that *ata* does not alter the truth conditions of the sentence which hosts it. There, we were interested only in the contrastive component of *ata*; however, it follows from those examples that the emotive element—however we define it—does not affect truth conditions either. In terms of semantics and pragmatics, this means that we would need to analyze the emotive component of *ata* as either a conventional implicature or a pragmatically derived conversational implicature, depending on whether or not the emotive component can be shown to be a conventional, semantic aspect of *ata*’s meaning.

A quick way to show that the bad attitude is not part of *ata*’s meaning is to find an example in which the bad attitude is missing. I asked consultants directly if it was necessary to be angry or have a bad attitude in the use of *ata*, and they said that it was not necessary. They said that it is common to use it in arguments, but that it wasn’t necessary to be upset or angry, and that it can be used any time the speaker is excited. Some consultants also mentioned that they would use it when they were excited in informal situations. So, based on my consultants’ intuitions, it seems that use of *ata* does not require a bad attitude.

Consider (9) again. I was present when this exchange occurred, and there was no suggestion of anger or bad attitude on the part of either speaker. Instead, speaker A was merely surprised at the information given by speaker B, which didn’t match what A had previously believed. The conversation continued after this to a mundane, non-emotive topic.

(9)  A: Wat yu deh gwaahn yestudeh, mayn?
    B: Yestudeh da-mi hoahn.
    A: **Ata** ai si yu yestudeh! Ai si yu yestudeh bai Braddick! Rait?
A: What did you do yesterday, man?
B: Yesterday I was at home.
A: ATA I saw you yesterday! I saw you yesterday by Braddick’s! Right?

The absence of emotion or bad attitude in this exchange suggests that this is not a conventional component of ata’s meaning, and this matches precisely with my consultants’ own intuitions about how ata can be used.

Accordingly, if the emotive component is not conventionally associated with ata, then it cannot be a conventional implicature, as this category of meaning is by definition non-cancelable.12 The only remaining option is that it must be pragmatically derived in context or conveyed via paralinguistic signals above and beyond the linguistic content. The latter option—paralinguistic signals such as body language, tone, etc.—are certainly significant, but they are beyond the scope of this paper. In addition to these, however, I believe that a kind of Gricean reasoning plays a role in the process above and beyond any paralinguistic signal. That is, if a speaker chooses to use the more restricted ata rather than a less restrictive alternative, such as bot, she then invites inferences that there is something marked about the situation, which could very well be interpreted as the speaker being upset or, in the words of KID, having “a bad attitude”.

We can look to Horn’s (1984, 2004) Division of Pragmatic Labor as a means of understanding this inference process.13 Here is Horn (1984: 22) in a description of the process:
The use of a marked (relatively complex and/or prolix) expression when a corresponding unmarked (simpler, less ‘effortful’) alternate expression is available tends to be interpreted as conveying a marked message (one which the unmarked alternative would not or could not have conveyed). Essentially, if a marked expression is used to describe a situation, it is likely that the speaker believes there is something marked or unusual about the situation itself. This invites addressees to infer or calculate conversational implicatures above and beyond the literal message. Horn (2004: 16) illustrates this process, as in (23):

(23) a. He stopped the machine.
b. He got the machine to stop.
c. There is something unusual about the way he got the machine to stop.

While (23a-b) seem to be truth-conditionally consistent, (23b), which is more marked and prolix, conveys a conversational implicature that there is something unusual in the way he got the machine to stop, as in (23c).

12 Horn (2004: 2) provides a succinct characterization of the Gricean conventional implicature: “Such detachable but non-cancelable aspects of meaning that are neither part of what is said nor calculable from what is said are conventional implicatures.”

Horn is concerned here primarily with markedness as a product of prolixity. However, markedness can be achieved many ways.\textsuperscript{14} We have seen thus far that \textit{ata} is much more restricted syntactically, semantically, and pragmatically, than \textit{bot} is. Thus, by its very nature it is a much more marked term, and as we have seen above, \textit{bot} can appear in any of the \textit{ata} examples, but the reverse is not true. Accordingly, a speaker’s use of the marked \textit{ata} can invite the addressee to draw inferences with respect to a marked situation, including the speaker’s intention or state of mind in using the term. If the term encodes emphatic contrast, as I am arguing, it is only a small step from there to inferring an angry or negative state of mind on the part of the speaker. However, as I have shown above with respect to (9), this negative emotional message is not present in every use of the term. It is cancelable, and so it is non-conventional. The emotive content can thus be excluded from the lexical semantic content of \textit{ata}, resulting in a simpler, more minimal semantics for the word.

In the next section, I provide a brief comparison of \textit{ata} with the Spanish adversative discourse marker \textit{si}, as described in Schwenter (1998, 2002), which is seen to be very similar to \textit{ata} in its syntax, semantics, and pragmatics.

3 Dialogal Discourse Markers: Kriol \textit{Ata} and Spanish \textit{Si}\textsuperscript{15}

According to Schwenter (1999, 2002) \textit{si} is an adversative discourse marker, which is generally limited to colloquial conversation.\textsuperscript{16} It makes no truth-conditional contribution to its host proposition and must be used in a refutation of some aspect of preceding discourse, whether that aspect is propositional, presuppositional, inferential, metalinguistic, etc. In terms of syntactic position, \textit{si} is required to be sentence initial. Further, \textit{si} must appear in a dialogue rather than a monologue: i.e. it must be used to respond to a second speaker. Finally, Schwenter describes the refutation in question as exclusive, which means that the \textit{si}-marked content is incompatible with that which it refutes.

\textsuperscript{14} For example, Comrie (1976: 111) defines markedness much more generally:

\begin{quote}
The intuition behind the notion of markedness in linguistics is that, where we have an opposition between two or more members [...], it is often the case that one member is felt to be more usual, more normal, less specific than the other (in markedness terminology it is unmarked, the others marked).
\end{quote}

\textsuperscript{15} Schwenter (1999) derives this form and meaning of \textit{si} from the Spanish conditional protasis marker \textit{si} ‘if’. According to Schwenter, these different meanings (and others) should be understood as polysemous dimensions of the same form, positioned on a scale of relative distance from the conditional marker. See Schwenter (1999: Chapters 4-5).

\textsuperscript{16} Schwenter (1999: 126) uses the term “adversative” as opposed to “contrastive”, as he argues that the former is a general cognitive concept, while “adversativity is a purely linguistic notion”. This point is well taken, and I believe \textit{ata} could just as easily be described in terms of adversativity rather than contrast; however, the account of \textit{ata} given here is generally situated in a tradition which uses terms such as “contrast” and “contrastive discourse marker”, so I retain those terms for consistency.
Kriol *ata* appears to line up almost directly with Spanish *si*. The obvious difference thus far is that *ata* requires its contrast be made emphatically, and this does not seem to be the case with a *si*-refutation, which certainly can be emphatic but which needn’t be. Further, I’m not certain it’s the case that *ata* content must be completely incompatible with the contrasted discourse content. My hesitation hinges on the *ata* example given above in (1), in which the *ata* content and contrasted discourse content might not be completely exclusive. I will discuss this example and its implications in terms of exclusivity in more detail below. Before doing so, however, let’s consider some of the *sidata* and how it compares to *ata* more generally.

Consider (24) [Schwenter (1999: 4.15)], in which *si* is used in a propositional refutation, with respect to who hung up the phone on whom:

(24) [M recounting a telephone incident between Q and Q’s boyfriend T]

M: *y resulta que se cabreó y le colgó!*
‘and it turns out that she (Q) got mad and she hung up on him!’

G: *Si le colgó él a ella.*
‘SI he hung up on her.’

M: *Ah, le colgó él a ella? Pues ahora me entero.*
‘Ah, he hung up on her? Well now I find out.’

In (24), *si* contributes no truth conditional content to M’s statement. As Schwenter demonstrates, *si* is optional in the refutational, declarative uses such as (24). Further, the content of G’s refutation is incompatible with that of M’s: either she hung up on him, or he hung up on her. Notice, though, that the *si*-statement need not be understood as being an emphatic rejoinder to M’s claim above.

Now consider a second example with *si*, in which it signals a refutation with a conversational implicature in the preceding discourse. In (25), speaker A implicates that B likes only a particular flavor of Kool-Aid. Q then refutes this implicature with a *si*-statement.

(25) [B (age 6) looks strangely at a glass of purple Kool-Aid]

B: *¿Qué es eso?*
‘What is that?’

A: *Es el que te gusta a ti.*
‘It’s the one that you like.’

Q: *Si a ella le gustan todos los sabores.*
‘SI she likes all of the flavors.’

Again, the presence of *si* does not make a truth conditional contribution to its host proposition. The *si*-content is also incompatible with the implicature A conveys, which is that purple is the only flavor B likes. Thus, Q’s *si*-statement is a refutation of A’s conversational implicature, which it marks as incompatible with the *si*-content.
As I mentioned above, it is not clear that *ata* must make a clear exclusive refutation, where the *ata*-content is completely incompatible with the contrasted discourse content. Consider (1) again. The *ata*-statement seems to contrast with a conversational implicature generated by A’s question: B takes A to imply that she was wrong to hit her sister.

(1)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>A:</td>
<td>Wai yu nak yu sista?</td>
</tr>
<tr>
<td>B:</td>
<td><em>Ata</em> da shee nak me fos!</td>
</tr>
</tbody>
</table>

A: Why did you hit your sister?
B: (But) it was she who hit me first!

My hesitation here, and it is a mild one, is that it might be too strong to say that B’s *ata*-statement is clearly incompatible with A’s implicature. That is, B could actually believe it was wrong to hit her sister, as A implies, but at the same time offer the *ata*-statement as an explanation for her action. This is tricky for a couple of reasons. For instance, we can’t really know the actual content of A’s conversational implicature. B might have inferred a message that is completely incompatible with her *ata*-statement, and in this case, *ata* would line up exactly with Schwenter’s depiction of *si* and exclusive refutation. On the other hand, B might have inferred a message from A that is logically compatible with B’s *ata* statement, but with which B still desires to make an emphatic contrast. In this latter case, *ata* would differ from Schwenter’s account of *si*. I don’t have an answer for this possible difference between the two at the present; however, future research will certainly be undertaken to clarify this.

We have seen, then, that *ata* and *si* are quite close along many dimensions: much closer in fact than either of them is to any English counterpart. They do appear to differ in terms of emphaticness and possibly in terms of strength of refutation as well.

In the final section, I will suggest a possible origin for *ata* in the Kriol focus marker *da*.

4 **Da: A Possible Source for Ata**

The origin of *ata* is an interesting question. Many words in Belizean Kriol are transparently derived from English words and so their origins are straightforward. With *ata*, however, a source—English or otherwise—is not easy to locate. In this final section, I suggest very briefly a likely source for *ata* in the Kriol focus marker *da*.

Doing diachronic work on any creole is necessarily challenging, as they are almost always stigmatized languages with no writing system or written tradition. There are glimmerings of change here, though, with the development of alphabets in some creole languages, and some artists beginning to write poetry in fiction in creole. Most of this, however, is far too recent to provide the kind of record necessary to do diachronic work. As a result, what follows here is
mostly speculative, based on an existing form in the language that has a broader function but which has a similar phonology.

The morpheme *da* is a general focusing element in Kriol, which can occur at the sentence level or internally, highlighting a predicate, embedded sentence, or other constituent. According to Escure (1993), focus marker *da* has likely been derived from demonstrative *dat* ‘that’. She writes further of the focusing *da* that it is “in effect a functional equivalent of the English clefted construction” (235). And indeed, sentence-initial *da* is frequently rendered in it-cleft form when translated. Here are some samples from Decker (2005: p.98-99):

(26) Da Jan weh gwain da Jamayka.  
‘It is John who is going to Jamaica.’

(27) Da Jan weh shub di kyaat.  
‘It was John who pushed the cart’.

(28) Da wahn buk weh Jan gi mi.  
‘It was a book that John gave to me.’

It-clefts have been known to have focusing and contrastive properties since at least Jespersen (1949: 147f.), who describes clefts as:

A cleaving of a sentence by means of *it is* (often followed by a relative pronoun or connective) serves to single out one particular element of the sentence and very often, by directing attention to it and bringing it, as it were, into focus, to mark a contrast.

Since Jespersen’s work, cleft sentences have been discussed at great lengths in the linguistics literature in terms of their semantic and pragmatic properties. The properties of focus and contrast are mostly a general consensus, though how these shake out in terms of constructional or compositional semantics and pragmatics is less agreed upon.

In any case, it seems not a far leap from focus marker *da*, which creates cleft sentences, to the full contrastive marker *ata*. It seems likely that a sense of *da* could have undergone semantic narrowing, resulting in the discourse marker *ata*, which marks an emphatic contrast as opposed to the more broad focus of *da*. If this was the case, then it would be unsurprising that the phonological form of *da* would have shifted as well with the change in meaning.

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17 I will not rehearse the cleft literature here. Readers are referred to Prince (1978), Hedberg (1990), Lambrecht (1994, 2001), Patten (2012), and the many references found in these works for detailed discussion of the syntax, semantics, pragmatics, and diachronic development of it-clefts.
5 Conclusion

This paper has provided a brief look at the discourse marker *ata* in Belizean Kriol. I have argued that *ata* is used to convey an emphatic contrast with the immediately preceding discourse and that this contrast is a conventional implicature of the type described in Grice (1975). It also frequently is used to convey negative emotion, which I argue is not semantically encoded in the word but that should instead be calculated in context via Gricean pragmatic reasoning as a conversational implicature. Finally, I sketched a brief diachronic origin for *ata* in the Kriol focus marker *da*. This last part of the paper awaits a more comprehensive treatment in later work.

6 References


Whose Kriol is *Moa Beta*? Prestige and Dialects of Kriol in Belize

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*University of Minnesota, Duluth*

1 Introduction

This study reports on language attitudes toward varieties of Belizean Kriol in the Central American, Caribbean country of Belize. We used a verbal-guise test with 81 participants, collecting both quantitative and qualitative data in Punta Gorda and Belize City, and we found that the variety of Kriol spoken in Belize City is perceived along several dimensions as being of greater prestige than the variety spoken in Punta Gorda. Derivative of these findings is the potentially more interesting fact that there is more than one variety of Kriol spoken in Belize in the first place—a fact which has not been previously reported in the literature. This paper will report the preferences of Kriol speakers toward two different varieties of Kriol, grouped by city and gender, on eight different personality attributes. We believe that these results can have potentially important consequences in Belize in terms of education and language planning, especially as the recently independent country continues to grow and develop its identity as a country with strong cultural and historical ties to both Central America and the Caribbean.

1.1 Belizean Kriol and Languages of Belize

Belize—formerly British Honduras—gained full independence from Great Britain in 1981. There is a strong influence of English as a result of this colonial history as well as from the large levels of immigration to and from the US. At the same time, however, Belize is linguistically diverse. According to the 2010 Belizean census, the country’s approximately 330,000 inhabitants speak ten or more different languages (Figure 1).

<table>
<thead>
<tr>
<th>Language by Ethnic Group</th>
<th>Number of Speakers</th>
<th>Language by Ethnic Group</th>
<th>Number of Speakers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinese</td>
<td>2,600</td>
<td>Maya Ketchi</td>
<td>17,581</td>
</tr>
<tr>
<td>Creole</td>
<td>130,467</td>
<td>Maya Mopan</td>
<td>10,649</td>
</tr>
<tr>
<td>English</td>
<td>183,903</td>
<td>Maya Yucatec</td>
<td>2,518</td>
</tr>
<tr>
<td>Garifuna</td>
<td>8,442</td>
<td>Spanish</td>
<td>165,296</td>
</tr>
<tr>
<td>German</td>
<td>9,364</td>
<td>Other</td>
<td>2,729</td>
</tr>
</tbody>
</table>

Figure 1. 2010 Census data.

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1 This project was funded by two grants from the Global Programs and Strategy Alliance at the University of Minnesota. Portions of this paper were presented at the 2014 meeting of the Linguistic Society of America.

2 The full-length report on this project, which provides much more detailed results and discussion of 8 additional personality attributes, is currently under review as Salmon & Gómez Menjívar (Under review).
Kriol is an English-based creole, and is often considered to be the language specific to the ethnic Creole people of Belize—i.e., those of Afro-European descent. Although the data above collapses ethnic group with language, it is important to note that ethnic Creoles are not the only speakers of Kriol. The language has become something of an unofficial lingua franca across the country regardless of ethnicity, and most Belizeans speak Kriol with differing degrees of proficiency. According to Decker (2005:4), though ethnic Creoles are concentrated in Belize City and the Belize River Valley, “mother tongue speakers of Kriol can be found in most villages and towns throughout the country.”

1.2 Kriol

Holm (1977:1, as reported in Decker 2005) estimates that approximately 88 percent of the vocabulary of Kriol is shared with English. But as Decker notes, this number is likely too high, as many Kriol words sound like English words but have different meanings and grammar. Thus, Kriol, like most other creoles, exists on a continuum, which ranges from a very strong identification with Standard English (the acrolect form) to a form that diverges sharply from the lexifier language (the basilect form). Decker (2005), following Young (1973) and Escure (1981), illustrates these variational points along the Kriol continuum in (1).

(1) Basilect Di flai dehn mi-di bait laas nait.
    Mesolect Di flies dem mi bitin las nite.
    Acrolect Di mosquitos were bitin las nite.
    Standard English The mosquitos were biting last night.

This is of course an idealization, as Kriol speakers generally move between the different points of the continuum depending on the needs of the given audience, situation, etc., much as speakers of Standard American English or any other language move between registers and styles within their own language based on the exigencies of the situation.

There is currently a strong movement underway by the Belize Kriol Project and National Kriol Council of Belize to promote Kriol. To this end, there is an English/Kriol dictionary (Herrera 2007) which defines many Kriol words and includes a chapter with a brief grammatical description, and there is also a Kriol translation of the New Testament, which was completed in January 2013. These projects complement a literary tradition of short fiction and poetry in Kriol, as well as a weekly newspaper column in The Reporter and a weekly radio show on Wave Radio FM 105.9. Lastly, there have been three linguistic grammars written of the language—i.e., Young (1973), Greene (1999), and Decker (2005).

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3 See Escure (1997: 28-39) for a sociohistorical outline of Belizean Kriol, and suggestions as to the putative origins of Kriol in contact between Africans, Europeans, and Miskito Indians in the 18th and 19th centuries.
4 Much of the work of these two organizations can be seen at the following web site: http://www.kriol.org.bz/.
5 Greene (1999) is based on expatriate populations of Belizeans in New Orleans and New York City.
The emerging language rights movement in Belize has focused on educational institutions. To some extent, Kriol is discussed in public primary and secondary school in Belize. The country’s official educational policy as of 2008 says that students are taught to see the differences between English and Kriol, and that there should be discussion of when it is appropriate to use Kriol as opposed to English; however, it is not taught as a subject, and it is not the language of instruction for other subjects. Further, according to many of our participants, Kriol is not discussed in public schools at all, and they do not consider it to be a legitimate language. Many referred to Kriol as ‘broken English,’ and this exact phrase was one that that we heard almost everywhere by Belizeans with respect to Kriol.

2 Language Attitude Research on Kriol

There appears to be no previous research at all on attitude comparisons among regional varieties of Kriol. There have been some impressionistic descriptions of overt and covert prestige relations of Kriol relative to English or Spanish or Garifuna, but none to our knowledge considers the question of attitude and prestige within varieties of Kriol itself, and there is no attitude work done in an empirical, systematic way.

For example, Ravindranath (2009), writing primarily about language attitudes in the Garifuna community, suggests that Kriol is frequently seen as having greater overt prestige than Garifuna. This is a position that Escure (1997) and Bonnor (2001) take as well. Bonnor also discusses the less prestigious place of Kriol with respect to English, writing, “Creole speakers commonly defer to the superiority of speakers of foreign varieties of English, like those associated with the United States and England, and accord them greater prestige” (p.82). The result here—at least along one dimension of overt prestige—seems to be a hierarchy in which US/UK Englishes are most prestigious, followed by Kriol, and then Garifuna. Things are more complex than this, however, when covert prestige is considered and when other dimensions of

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7 The following is an explanation we recorded from a Belize City taxi driver on the origins and state of Belizean Kriol:

   The Kriol language or Kriol dialect that we have here in Belize is actually broken English. It’s English not being said in the proper form, from the days that the English were colonizing Belize and the slaves were learning the language, they said the word the way that they thought they heard it, and that became the language of the day. The slower Kriol is talk, it sound like English. But when you talk it fast, it’s hard for anybody to just pick up. (male, mid-40s, ethnic Creole, native Kriol speaker).

8 This dearth of attitude research on Belizean Kriol seems to be endemic to creole linguistics in general, as Wassink (1999:58) reports, “the body of published research concerning language attitudes held by speakers of pidgin or creole varieties is rather limited.”
9 Ravindranath (2009: 126-130) provides excellent summaries of claims that have been made with respect to Kriol and English, Spanish, and Garifuna. These comparisons, however, are largely impressionistic and anecdotal, which is the case with most discussions of language attitudes in Belize—including LePage (1992) and Ravindranath (2009).
3 Research Questions, Design, and Methodology

Our objective has been to examine the attitude and prestige system in place among regional varieties of Kriol. The initial phase of our fieldwork, involving informal conversations with Belizeans, revealed the rich complexity of attitudes in Belize: the pride in the language and country with the ever-accompanying warnings that Kriol was not good English. We initially encountered this seeming incongruence of attitudes in the country’s largest urban area, Belize City, and we wondered if it would hold throughout the country in the rural areas as well. We thus decided to design a study that would go beyond the standard comparison of a dominant/prestige language (Standard English in this case) with the non-dominant/stigmatized language (Kriol) that is commonly found in language attitudes studies.

Based on our initial fieldwork, we hypothesized that there was significant regional variation in Kriol and that Belizeans would have different attitudes toward these varieties. We then developed the following set of questions to guide our research.

(a) Are attitudes toward Kriol conditioned by regional variation?
(b) Are attitudes toward Kriol conditioned by urban/rural conditions?
(c) Are attitudes toward Kriol conditioned by multilingual contexts?
(d) Are there gender differences in attitudes toward regional variants?
(e) Are there regional dialects of Kriol?

With these questions, we hoped to learn how attitudes toward Kriol vary along rural and urban lines, across gender, and across regions. This offers the first coherent, empirically-driven study of attitudes toward varieties of Kriol.

For example, one Belizean told us that in the northern part of the country, speakers might say *Ai chravl wid mi haat* which translates literally to ‘I travel with my heart’, but which means idiomatically that the speaker has recurring heart trouble. On the other hand, it was reported that in Belize City speakers would say instead *Ai gat haat chrobl* ‘I have heart trouble’. It seems likely here that *chravl/chrobl* are simply different pronunciations of the same word: i.e. differing vowel qualities and a labiodental fricative [v] in the north and a bilabial stop [b] in the city. Somewhere along the way the difference in pronunciation facilitated a semantic reanalysis from *chroble* ‘trouble’ to *chravl* ‘travel’. In this case, the reanalysis seems to make plausible sense in the context, resulting in an “eggcorn,” which is a type of semantic change discussed at length on the linguistics blog *Language Log* as well as in numerous subsequent publications. See Liberman (2003) and Liberman & Pullum (2006) for discussion and history of the phenomenon.

In terms of variation, the *chravl/chroble* distinction suggests a place to begin investigation of phonological variation in the Kriols spoken in different parts of the country. Our approach to variety in this present study was holistic, though, (Kristiansen 2009, 2011) as we were not manipulating individual markers (Labov 1963), but instead used recorded natural speech of native speakers from each of the areas in question. Isolating clear phonological markers will be a goal of future research.
3.1 Fieldwork Sites

We chose a northern urban area, Belize City, and the southernmost sizeable town, Punta Gorda, as our fieldwork sites. Both are coastal cities, in which fishing plays an important economic and cultural role and in which various kinds of maritime tourism—fishing, scuba diving, etc.—are important to the economy. Belize City is the country’s cultural center for ethnic Creoles, with a population of 61.2 percent ethnic Creole (Belize Census 2010). It is also the country’s largest city, with an overall population of approximately 68,000 residents. Punta Gorda, on the other hand, has a much smaller percentage of ethnic Creoles, at 14.7 percent, and a much smaller overall population of approximately 6,000 (Belize Census 2010). Importantly, there is little contact between the two cities. This is due to the difficulty of traveling between the two locations, as well as the perception among residents of Punta Gorda that Belize City is a dangerous place due to the extensive drug and gang violence in the city.\(^\text{12}\)

3.2 Research Design

We designed a verbal-guise test (Cooper 1975; Huygens and Vaughn 1983; Kristiansen 2009, 2011) to gauge attitudes toward the Kriol spoken in the two locations. The basic set up included recordings we made of local speakers in Belize City and Punta Gorda, as well as a modified Likert survey which was filled out by test participants in their ratings of the two recordings.

Unlike the matched-guise test (Lambert et al. 1960), which uses recordings of one speaker performing two or more different varieties, the verbal-guise test uses different speakers for each language variety. Like the matched-guise test, however, the verbal-guise conceals the identities and distinguishing locational information of the speakers from the participants. Kristiansen (2011) notes that the verbal-guise test can result in a relaxed control of voice and content effects, as compared to the matched-guise test, since there are two different speakers in the former. We tried to control for this as much as possible by recording speakers who were of the same age, sex, and ethnicity. Further, we deemed it unlikely that we would be able to find a

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Very little has been said about the role of gender in sociolinguistic attitudes in Belize—or, the rest of the creole continuum in the Caribbean, for that matter. See Winford (1991) on this fact. Escure (1991) is an exception, as she investigates the role of gender in linguistic variable choice in the village of Placencia in Belize. The present study differs from Escure’s in important ways: i.e., it is concerned with attitudes toward regional dialects across the country and in urban areas rather than within the internal social dynamics of a small rural village. Winford (1991:575), discussing Escure’s study, writes, “One suspects that very different pictures of sexual differentiation in language will emerge from investigation of urban communities ....”

\[\text{12} \]

According to the US State Department Crime and Safety Report for Belize in 2013:

Due to the extremely high murder rate per capita, Belize is the sixth most violent country in the world ... In 2012, Belize recorded 145 murders, setting a new record for homicides in the country. ... The majority of the homicides occurred in Belize City.

single speaker who controlled Kriol as spoken both in Belize City and in Punta Gorda. Thus, our test recordings were made by one individual from Belize City (Speaker 1) and a second individual from Punta Gorda (Speaker 2). Both of these speakers were ethnic Creole men in their late 30s, shared the same occupation of taxi driver, and both had lived their entire lives in Belize City and Punta Gorda, respectively. This allowed us to ensure that the Kriol variety they spoke reflected that spoken in our sites of interest, and so there were no concerns with authenticity as there can be with the matched-guise tests (see Garrett 2010: Chapter 4 on authenticity questions in the match-guised test).

The recordings were made on a Fostex FR-2LE digital recorder, using a Beyerdynamic M58N(C) microphone, which was fitted with a felt windscreen. The Fostex recorder has an easy digital playback function, which we used to deliver the audio recordings to each of our test subjects through a pair of Sony MDR-710 over the ear headphones. Both recordings were made outside in garden environments, and the sound quality of the recordings is very clear, with very little noise from the equipment or surrounding environment. Following the methods of Rickford (1985:148), both speakers were recorded in natural conversation with the male researcher. The final result was one recording in which the speaker discusses fishing, and another recording in which the speaker discusses a story his grandfather told him.

With the editing of both recordings, there is a sense of *en media res*: i.e., the participants of the study hear part of a conversation that is already in progress, as if they are simply overhearing a fragment of conversation on the street. This manner of editing has the effect of backgrounding the actual content of what speakers were saying and thus foregrounding the voice and language of the speech itself. Further, with this type of editing, the speech to which

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13 We would have preferred to have a male and female recording from both areas, but this would have meant that test respondents had to listen to and rate at least four recordings rather than just two. We believed that this was not feasible in the brief, spontaneous, on-the-street type of interviews we conducted. As a result, we could not gather data on attitudes toward female speakers in this present study; however, this is certainly part of the plan for future research.

14 Unlike Rickford, though, we did not allow test participants to listen to the entire recorded conversation; instead, we identified a coherent 30-second Kriol monologue that could stand alone in each recording, and we edited the recordings so that these were all that could be heard. The 30-second samples are considerably shorter than the two-minute samples employed in the classic matched-guise survey of Lambert et al. (1960); however, due to our on-the-street survey technique, it was necessary to shorten the recordings to a more flexible and workable length. Similarly, Kristiansen (2009) also employed 30-second samples in a verbal guise investigation of Danish accents in Copenhagen.

15 It is often the case that matched-guise and verbal-guise tests will involve the exact same content in the recordings of both speakers; i.e. both speakers will read the same passage into the recording, etc. This is not the case in our model, as the content of the two recordings is different, but we believe uncontroversial. We are convinced by Lee (1971) that the repetition of the same content in the different recordings results in a very unnatural and artificial situation for the test participants. See also Campbell-Kibler (2013:143) on the importance of spontaneous stimuli “for a more natural evaluation task.”

16 See Salmon (2011) for a discussion of naturalness and manipulation of experimental conditions. Salmon is concerned with video cinematography in experimental semantics, but the idea of maximizing the extent to which conditions are natural for test participants is directly applicable in this present study.
participants were exposed was more natural then, say, a recording of someone reading aloud from a written passage, as is commonly done in this kind of research.

3.3 Methodology

We approached potential participants on the streets of Belize City and Punta Gorda: on the campuses of the University of Belize in Belize City and Punta Gorda, at the Vernon Street fish market in Belize City, the Front Street market in Punta Gorda, as well as in various homes and businesses in both cities. As a result, our respondents came from a wide variety of professional and ethnic backgrounds—from lawyers to insurance salespeople to security guards to street vendors to university students—from ethnic Creole to Garifuna to Kekchi and Mopan Maya, to young and old, and male and female. Indeed, our pool of respondents was as diverse and complex as is the population of Belize itself.

Ultimately, our participant pool (n=81: 43 men, 38 women) ranged in age from 20 to 60 years of age. Half of our participants were from Belize City and half were from Punta Gorda. Our participant pool was closely split between male and female in both locations. The surveys were anonymous, though we kept track of demographic information such as race, age, sex, location of interview, native language, and occupation. We used this information as a means of keeping our participant pool varied.

We initiated contact with potential test respondents by introducing ourselves and then stating that we were conducting a study on Kriol, without informing the participants what our actual interest in the language was. Those who opted to participate in our study first listened to Speaker 1 and then completed a five-level modified Likert survey, which included a total of 16 personality attributes for participants to rate. Each survey was printed on its own sheet of paper and attached to a clipboard, which the participants held as they filled out the survey. The rating sheet with Likert items that we gave to participants is reproduced below in Figure 2. Many of these attributes are standard across attitude studies such as ours, and the list we used was inspired by Loureiro-Rodriguez et al. (2012).

17 We saw two possibilities for gathering the kind of data we needed: the first was to use primarily university students in the traditional classroom setting, as is commonly done in these types of study. The other possibility was the individual personal interviews in a person-on-the-street manner, which we ended up choosing. We had several reasons in mind in choosing this latter method. First, we wanted to avoid what Wolfram (2011:305) refers to as “generic populations of middle-class university students.” Second, we believed it likely that status judgments would very likely be affected if surveys were done in the formal setting of the university classroom, as opposed to on the street (c.f. Creber and Giles 1983). Third, we wanted to collect both quantitative and qualitative data, and it seemed much more efficient to do this by using the Likert survey in addition to follow-up dialogue conducted on the spot with individual respondents. This kind of dialogue and data collection seems less likely in the more impersonal environment of a large classroom setting.

18 See Kristiansen (2011) for more on the need of keeping intentions secret.

19 Loureiro-Rodriguez et al. credit Woolard (1989) as their own inspiration. In addition to the standard questions on language attitudes surveys, we contributed the attribute violent to our survey as a means of probing current attitudes toward the Kriol spoken in Belize City, which, sadly, has a reputation throughout the country of having an extremely
INSTRUCTIONS: Please rate the speaker on the following personality traits, where 1 = not at all and 5 = very much.

<table>
<thead>
<tr>
<th>1. Attractive</th>
<th>1 2 3 4 5</th>
<th>9. Intelligent</th>
<th>1 2 3 4 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Educated</td>
<td>1 2 3 4 5</td>
<td>10. Modern</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. Eloquent</td>
<td>1 2 3 4 5</td>
<td>11. Phony</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. Friendly</td>
<td>1 2 3 4 5</td>
<td>12. Polite</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. Hard-working</td>
<td>1 2 3 4 5</td>
<td>13. Traditional</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6. Has sense of humor</td>
<td>1 2 3 4 5</td>
<td>14. Trustworthy</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>7. Ignorant</td>
<td>1 2 3 4 5</td>
<td>15. Unrefined</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8. Improper</td>
<td>1 2 3 4 5</td>
<td>16. Violent</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

Figure 2. Rating sheet given to participants.

This first survey of Speaker 1 included one open-ended question, which asked participants to indicate the origin of the speaker. This question was designed to elicit an important piece of information, i.e., whether or not participants could successfully identify the origin of the speaker on the recording. From this information we hoped to infer the extent to which variation exists in Belize and, if so, how well known the different varieties are. Once this task was completed for Speaker 1, participants were asked to listen to the recording of Speaker 2, and then follow the same survey procedure as described above.

When test participants were finished with the survey for Speaker 2, we then collected qualitative data along a few different dimensions. All of our participants were asked to indicate where they believed it was appropriate to use Kriol. In addition, half the participants were asked where it was appropriate to use English and half were asked where it was appropriate to use Spanish. These questions allowed us to discover general attitudes about English and Spanish, which will play roles in our next two studies. The last two open-ended questions provided us with information as to the linguistic background of our participants. All participants were asked to indicate the first language or dialect they learned, and they were asked to list all of the languages or dialects they spoke with any proficiency.

The interviews took 5-30 minutes, depending on how much the participants wished to add regarding the qualitative aspects of the survey. When the participant was finished with both surveys and had returned them to us, we immediately wrote any further observations or comments that arose during the process on the back of the survey form in question.

We realized after the survey was well underway that many participants seemed to have trouble understanding phony. As such, we do not consider this attribute further in the present paper.
4 Results

We report the results as individual Likert items, analyzed by city and gender. Figure 3, below, presents the scores for approximately half of the individual attributes, with all participants in the study from both locations grouped together. Thus, Figure 3 combines participants from Belize City (BC) and Punta Gorda (PG) to provide an overall picture of attitudes toward the two Kriol varieties under investigation.

The results are reported in medians and modes rather than means, as data for individual Likert items does not follow a normal distribution. Thus, these two non-parametric measures of central tendency guard against possible skewing by outliers in the Likert ratings—a protection that would not be in place if the results were reported in means.

When all participants in the study are grouped together, there is a preference for the BC Kriol in almost all of the positive categories, including attractive, educated, eloquent, friendly, sense of humor, intelligent, polite, and traditional. PG Kriol is clearly preferred only in the category of hard-working.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractive</td>
<td>4</td>
<td>4</td>
<td>Attractive</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Educated</td>
<td>4</td>
<td>4</td>
<td>Educated</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Eloquent</td>
<td>4</td>
<td>4</td>
<td>Eloquent</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Friendly</td>
<td>5</td>
<td>5</td>
<td>Friendly</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Sense of Humor</td>
<td>4</td>
<td>5</td>
<td>Sense of Humor</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Intelligent</td>
<td>4</td>
<td>4</td>
<td>Intelligent</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Polite</td>
<td>4</td>
<td>4</td>
<td>Polite</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Traditional</td>
<td>5</td>
<td>5</td>
<td>Traditional</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td><strong>Hardworking</strong></td>
<td><strong>3</strong></td>
<td><strong>3</strong></td>
<td><strong>Hardworking</strong></td>
<td><strong>4</strong></td>
<td><strong>5</strong></td>
</tr>
</tbody>
</table>

Figure 3. Combined ratings for both sites (n = 38 women, 43 men).

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21 See Meek, Ozgur, & Dunning (2007) and references therein for more on the nature of Likert data as well as for discussion of appropriate types of statistical methods.

22 The negative categories—i.e., ignorant, improper, unrefined, and violent—are not reported here, as they were rated as equal in the two varieties. Further, the negative categories received low ratings in general for both varieties, suggesting that neither Kriol is stigmatized.
In Figure 4, which follows below, the comparison is made by gender this time. Thus, Figure 4 lists only male test respondents from BC and PG. Here, the positive attributes of *attractive, educated, eloquent, friendly, sense of humor*, and *traditional* were rated higher for BC Kriol by both groups of men. Similar to what we have seen above, PG Kriol was rated higher in *hard-working* by both BC and PG men.

<table>
<thead>
<tr>
<th>Speaker 1</th>
<th>BC Men</th>
<th>PG Men</th>
<th>Speaker 2 (PG)</th>
<th>BC Men</th>
<th>PG Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attractive</td>
<td>4-4</td>
<td>4-4</td>
<td>Attractive</td>
<td>3-3</td>
<td>3-3</td>
</tr>
<tr>
<td>Educated</td>
<td>4-4</td>
<td>4-4</td>
<td>Educated</td>
<td>3-3</td>
<td>4-4</td>
</tr>
<tr>
<td>Eloquent</td>
<td>4-4</td>
<td>4-4</td>
<td>Eloquent</td>
<td>3-3</td>
<td>3-3</td>
</tr>
<tr>
<td>Friendly</td>
<td>5-5</td>
<td>5-5</td>
<td>Friendly</td>
<td>4-5</td>
<td>4-4</td>
</tr>
<tr>
<td>Sense of Humor</td>
<td>4-5</td>
<td>5-5</td>
<td>Sense of Humor</td>
<td>3-3</td>
<td>3-3</td>
</tr>
<tr>
<td>Traditional</td>
<td>5-5</td>
<td>5-5</td>
<td>Traditional</td>
<td>4-4</td>
<td>4-4</td>
</tr>
<tr>
<td><strong>Hardworking</strong></td>
<td><strong>3-3</strong></td>
<td><strong>4-4</strong></td>
<td><strong>Hardworking</strong></td>
<td><strong>4-5</strong></td>
<td><strong>4-5</strong></td>
</tr>
</tbody>
</table>

Figure 4. BC men (n=20) and PG men (n=23).

In the final breakdown, given in Figure 5, we see rating of the two Kriol varieties by BC and PG women. Here again, we see clear preference for BC Kriol in terms of *attractive, friendly, and traditional*. *Sense of humor* was rated highly by BC and PG women for BC Kriol, with BC women also rating PG Kriol highly in this quality. PG women, on the other hand, rated PG Kriol lower for *sense of humor*.

PG Kriol is rated higher than BC Kriol by both groups of women in terms of *hardworking*. The same is true for *improper*. This latter fact is especially interesting, and it will be addressed in detail below in §6.2.
Attractive 4-4 4-4 Attractive 3-2 3-3
Friendly 5-5 5-5 Friendly 4-5 4-4
Sense of Humor 4-4 5-5 Sense of Humor 4-4 3-3
Traditional 5-5 5-5 Traditional 4-4 4-3
Hardworking 3-3 3-3 Hardworking 4-5 4-5
Improper 2-1 1-1 Improper 3-3 3-3

Figure 5. BC women (n=21) and PG women (n=17).

5 Discussion

Our results show a strong preference for BC Kriol in several of the positive traits, with the negative traits also generally rated lower for BC Kriol. It should be stressed, however, that neither Kriol received high ratings for negative traits. In other words, while BC Kriol seems to be viewed more favorably in general, it is not the case that PG Kriol is stigmatized or viewed especially unfavorably. In the following sections, we will discuss what we viewed as the most significant aspects of these findings.

5.1 Positive Traits

BC Kriol was rated higher for several of the positive traits—especially those which would be appealing on a personal, familiar level. We believe that there are clear reasons to expect that this would be the case, including the fact that the Kriol spoken in Belize City is more traditional than that spoken in Punta Gorda and that it comes into contact with fewer languages than is the case in Punta Gorda.

The Belize City area and the nearby villages in the Belize River valley are home to a much higher percentage of ethnic Creoles than anywhere else in the country. The Creoles claim Kriol as a native language as opposed to a second language or lingua franca as is often the case elsewhere in Belize. This area is also commonly considered to be the cultural center for the Creole people. Many of our test participants in Punta Gorda and elsewhere in our travels in the

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23 We are referring to the following attributes as positive: attractive, educated, eloquent, friendly, hard-working, sense of humor, intelligent, polite, and trustworthy. The categories modern and traditional are not clearly positive or negative. The negative attributes are ignorant, unrefined, and violent.
country made comments to the effect that if we “wanted to hear real Kriol, we needed to go to Belize City and to the villages.” Belize City and the river valley are also predominantly monolingual, or bilingual with Kriol and English. This differs from other parts of the country, such as the south, west, and northern borders with Guatemala and Mexico, in which several languages—i.e., Kriol, English, Spanish, and Mayan languages—are spoken side by side. It makes sense then to think of the Kriol spoken in the BC area as being the more traditional vernacular variant, as it has a much higher concentration of ethnic Creoles and there is less contact with other languages. The results given in the overall rankings in Figure 3 also clearly bear this out: BC Kriol is rated as more traditional than PG Kriol, while PG Kriol is rated as more modern than BC Kriol.

The conclusions we can draw from these facts fit well with the findings of surveys of creole languages reported elsewhere in the literature, in which the vernacular rates high in solidarity and personal appeal but low in power.24 For example, Rickford (1985:156), partially quoting Reisman (1970:40) on this relation, writes, “Creole [in Antigua] violates ‘English’ standards of ‘order, decorum, quietness, and authority’, but in which people in fact ‘take great joy.’ ” This evocative description of Antiguan Creole, its formally subjugated relationship to English, and its appeal to the personal and familiar in the Creole, is precisely what we found with respect to BC Kriol. All of the groups we surveyed rated BC Kriol high on positive characteristics such as friendly, sense of humor, polite, etc.

A curious question regards why PG Kriol is rated consistently higher in the category hard-working. Given what we have described above, with BC Kriol as the more traditional of the two variants of the language, we believe that a very likely answer to this question can be seen in an analogy with Wolfram and Schilling-Estes’ (1998) description of the Ocracoke Islanders and their attitudes toward the English Brogue spoken on the island.25 This explanation also dovetails nicely with the gender patterns in Kriol attitudes, in which women show the least difference in prestige between the two variants. That is, for women, BC Kriol is more prestigious in only four categories, which is lower than we see for men, who rate the traditional BC Kriol as more prestigious in six categories. On a story similar to that of Wolfram and Schilling-Estes’, this divergence by gender is to be expected. We consider this analogy in more detail in the next section.

5.1.1 Language Attitudes on Ocracoke Island, North Carolina

Similar to Belize, the economy of Ocracoke Island has historically depended heavily on fishing, but has more recently shifted toward a tourist-based economy. This reduction of what was traditionally the men’s occupation, according to Wolfram and Schilling-Estes (1998), has ramifications for attitudes toward the traditional way of speaking versus the more contemporary

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24 See, for example Labov (1963), Rickford (1985:151), and the references in Rickford.
25 Ocracoke Island is one of the most remote islands in the Outer Banks of North Carolina.
way of speaking that has come with the influx of tourism and the much more frequent contact with other languages and dialects on the island. According to Wolfram and Shilling-Estes:

As this transformation takes place, men’s ability to make a living via traditional male occupations such as fishing and crabbing is diminishing rapidly. [...] For men in blue-collar communities such as Ocracoke, it may well be that vernacular variants are more closely associated with economic power than standard variants, since men in such communities achieve economic power through physical ability and physical strength rather than the ability to verbally negotiate the established power structures of the corporate and political arena. Thus, if a man on Ocracoke wishes to display symbolic power as his real earning power declines, he will maintain or even heighten his usage of vernacular variants [...] (p.196).

The authors go on to write that women, on the other hand, have less need to accrue symbolic power, as their economic positions tend to improve with the increase of tourist-based occupations for women. Thus, men tend to see the traditional speech as an indicator of symbolic power, while the women are less inclined to do so.26

It is not difficult to see the relevance to the Belizean situation here, in which BC and PG men rated the more traditional BC Kriol as more prestigious than PG Kriol. The Belizean economy, similar to that of Ocracoke, has transitioned steadily over the last few decades from a male-dominated maritime and agricultural economy to one that embraces a significant amount of international tourism, and which provides advantageous economic opportunities for women in the process.27 We do not have quantitative data on numbers of women working in the tourism

26 As Wolfram (2008: 8) writes:

Because women suffer little affront to personal identity as the traditional way of life represented by the traditional language variety recedes, women are free to relinquish the traditional dialect as they come into contact with other language varieties. In fact, women may willingly embrace non-traditional language variants ... since such variants represent the demise of traditional, oppressive gender roles and definitions on the island.

27 According to the World Travel & Tourism Council’s economic impact report on Belize for 2012, approximately 33 percent of Belize’s GDP is tourism-based, with 30 percent of jobs in the country also directly related to tourism. For example, the coastal town of Placencia, where much of the work on Kriol and Garifuna reported in Escure (1981, 1991, 1997) was done, is no longer the rural, isolated fishing village described by Escure. In the last two decades the population has grown dramatically as a result of tourism, and there are many foreign-owned business and hotels, including one by the famous movie director Francis Ford Coppola. For example, Ocean Home: The Luxury Coastal Lifestyle Magazine had the following to say about Placencia in May 2012:

The Placencia Peninsula, along Belize’s central coastline, is the latest hotspot for Central American beachfront real estate and is home to Coppola’s thatched-roof beachfront retreat, Turtle Inn. To those who’ve previously stumbled upon Belize’s downtrodden coastal capital, Belize City,
sector of the Belizean economy, but based on our own experience throughout the country, women have a significant presence in the hotel, restaurant, and adventure tourism business. The situations between Belize and the Ocracoke Islanders are thus quite similar, both in the evolution of their economies and the shifting attitudes of women within them.  

The fact that PG Kriol is rated higher in terms of hard-working can also be understood within this analogy. The more traditional BC Kriol ranks high in traits of personal appeal; yet, like the vernacular variant of the Ocracoke Islanders, it harkens back to a more traditional economy that has rapidly given way to a modern, tourist-based one. Like the vernacular of the Ocracoke Islanders, the traditional BC Kriol can be seen to represent a kind of symbolic power—especially to men. Yet, this does not necessarily translate as a symbol of economic power.

In addition, Wolfram (2008: 7) describes the Ocracoke vernacular variant as being tied to the traditional islander identity. We can continue the analogy here with BC Kriol as the traditional variant in Belize and as similarly tied to Belizean identity. This is especially important at the present time, given the questions of identity that exist in Belize with the changes the country has undergone since independence in 1981, i.e., the massive emigration of Belizeans to the US and elsewhere, the massive immigration of Spanish-speaking immigrants to Belize, and the aforementioned shift from the maritime subsistence economy to the tourist-based, service economy. Belize is very much a country in flux, and as we describe below in more detail, Kriol (especially BC Kriol) seems more than ever to be a marker of traditional Belizean identity.

5.2 Negative Traits

BC Kriol is seen to be more prestigious than PG Kriol along several dimensions; however, neither Kriol was perceived as especially negative or stigmatized. Thus, negative traits improper, unrefined, and violent were ranked relatively low in all groupings. We believe there are a couple

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28 One wonders to what extent this pattern of culture, gender, and economics generalizes across cultures. That is, in many places around the world we see economies that traditionally depended on male labor now shifting to tourist or other modern economies, in which women play a greater role and thereby accrue greater economic and personal power. In these shifting economies, then, do the displaced men consistently hold the traditional language in higher prestige in terms of Capability? For example, Mayan women in Guatemala have over the last few decades taken the lead from Mayan men in terms of economic production. What was formerly a male-dominated agricultural economy has shifted into a high-tech tourist and merchant economy dominated by women who form cooperatives and market their goods online to the rest of the world. Gómez-Menjívar (2014), for example, writes about the way contemporary Mayan women shape Mayan identity through technology and the global market place. Nowhere are the men to be seen in this, and one wonders the extent to which there would be comparable implications in terms of language attitudes and symbolic power in this and other similar such shifted economies.

of factors involved here, including the place of Kriol with respect to English, and the role of Kriol in constructing a Belizean identity.

Recall the quote from Bonnor (2001: 82), given above in §1.3, with respect to the place of Kriol in Belize as compared to English: “Creole speakers commonly defer to the superiority of speakers of foreign varieties of English, like those associated with the United States and England, and accord them greater prestige.” In terms of overt prestige, foreign Englishes are held in higher esteem—especially in formal venues. This is precisely what we found in the qualitative part of our survey, which asked where it was appropriate to use English. As we discuss in detail below in §6.1, English was claimed by all participants to be appropriate at school, one’s place of employment, and so on. In other words, it is considered to be more formal. This fits very well with the low ratings of improper and violent, and the consistent and slightly higher rating of unrefined with respect to both Kriols. Thus, whatever the internal attitudes toward regional varieties of Kriol, it is likely that they all live under the shadow of the overtly prestigious foreign Englishes.30

Another factor which undoubtedly plays a role in the low negative rankings of both Kriols has to do with the role of Kriol in fashioning a national Belizean identity. According to Ravindranath (2009:129):

[D]ue to increased immigration from Spanish-speaking Central American countries, and a consistently high rate of emigration of Creole and Garinagu to the United States. These changes, accompanied by a historical distrust of Guatemala and its long lingering claim over Belize’s territory, as well as competition with Spanish-speaking immigrants for economic resources in Belize, have resulted in an increase in nationalistic feeling. As Escuré and LePage point out, BC is and has been important as a marker of Belizean identity, and in the face of these pressures it has developed even further as a sign of one’s true Belizean citizenship.31

30 Interestingly, questions regarding the place of English played no role in our survey until the very end. Participants were only asked about English after they had already completed the Likert rankings. However, it is likely that an implicit comparison was made by participants due to the fact that the surveys themselves were conducted in English. As Creber and Giles (1983) have shown, the setting of research surveys, including formality and informality of environment, as well as language in which the research is conducted (Webster 1996), can have an effect on results in attitude studies. Thus, it is possible that the presence of American English in the survey environment evoked implicit comparisons between English and Kriol, which might not have been the case had the interviewers been native speakers of Kriol.

One participant in particular—who told us she was studying to be a teacher—commented that she was happy we were educating people in Belize about the importance of speaking good English. This seemed very odd, as the surveys, recordings, etc. focused on Kriol rather than English. It does speak to the extent to which Kriol is still in the shadow of English, though.

Thus, both Krios can be seen as slightly unrefined in an implicit comparison with foreign English, but this does not cause them at the same time to be seen as especially improper. Instead, Krio, which is seen as a vernacular when compared to English, at the same time functions as a bond to identify and unify those who assert a Belizean identity. Or, as Voorhees and Brown put it in the 2008 *Lonely Planet: Belize* tourism book, “Krio is *di stikki stikki paat* that holds Belize together.”

6 Discussion of Qualitative Results

In addition to the Likert surveys, we included open-ended questions to gather overt attitudes about Krio, English, and Spanish, as well as demographic questions with respect to native language and number of languages spoken. The goal of the attitude questions was to get a sense for the place of Krio with respect to the official language of English, and the rapidly expanding Spanish. The question regarding Spanish was included primarily for planning our next study, so the results will not be reported here. The results of the first two questions are directly related and interwoven with one another, so those results will be discussed together in the next section.

6.1 Where is it appropriate to use English? Where is it appropriate to use Krio?

Krio holds a complex place in Belize in terms of prestige. Governor General (and linguist) Sr. Colville Young writes of the negative stigma of Krio among Belizeans:

> While this stigma is slowly being lessened by work such as that being carried out by the Belize Krio Project and by some attention being placed on Krio’s possible judicious use in the classrooms, it will take a long time to root it out—if it is ever rooted out—and in the process there may well emerge fierce language conflicts, rivalries, and divisiveness, all of which a young nation like Belize hardly needs. (2002:12)

Young’s concern was supported by the qualitative sections of our interviews, in which 100 percent of our respondents said that Krio should be spoken on the streets and with family but that English should be spoken at school, the workplace, and in more formal settings. These uniform results reveal very strong attitudes, and they are in accord with what has been said in print elsewhere. However, there is more to the story than this. For example, we have spent a great deal of time at university campuses in Belize and in businesses and government offices in Belize, and we have overheard a great deal of Krio being spoken in those places—it wasn’t spoken to us, but it was certainly spoken to other speakers of Krio. So, Belizeans do speak Krio at school and in the workplace; they just do so with other speakers of Krio.

Thus far, the situation suggests a standard sort of covert prestige relationship with English. For example, Trudgill (1972), investigating Norwich English, found that speakers
oriented overtly to the high-prestige variety, claiming that they used it frequently. In reality, though, it turned out that they used the low-prestige variety more frequently in conversation. Thus, they were oriented to the low-prestige variety covertly. They didn’t realize they were using it, and so the positive evaluation of the low-prestige variety was covert. This seems very similar to what we experience with respect to Kriol in Belize.

On the other hand, Ravindranath (2009:129) states that she believes Kriol carries an overt prestige among Belizeans. She does not carry out empirical research in support of this claim, as her interests are primarily with the Garifuna speakers in Hopkins Village. Her claim is rooted in the fact that there is an increasing immigration to Belize from Spanish-speaking countries, resulting in more competition for economic resources and resulting in a growing nationalistic identity and pride in Kriol as a means of distinguishing Belizeans from new immigrants.

Based on our observations in the largest urban setting, Belize City, and the southernmost town, Punta Gorda, we would agree with Ravindranath with respect to Kriol as having overt prestige, though we believe that it is a very different kind of overt prestige than English holds in the country. In our opinion, the prestige of Kriol is closer to what Dodsworth (2011:199) describes as “covert prestige with overt status.” Dodsworth cites Milroy (1980:19) on this kind of status:

[I]nstead of positing a sociolinguistic continuum with a local vernacular at the bottom and a prestige dialect at the top, with linguistic movement of individuals in a generally upward direction, we may view the vernacular as a positive force: it may be in direct conflict with standardized norms, utilized as a symbol by speakers to carry powerful social meanings and so resistant to external pressures.

These ways of considering prestige, described by Dodsworth and Milroy, seem much closer to us with respect to the Kriol situation in Belize. English certainly occupies an elevated space, but this does not necessarily translate into a strong overt social prestige among Belizeans, as they frequently use Kriol amongst themselves in formal settings. On the other hand, Kriol is not the language of education and government, but it does carry a kind of social prestige as a marker of national identity and as an emerging lingua franca.

In addition to the survey, we also find evidence of “covert prestige with overt status” in advertisements and signage around the country. For example, in Punta Gorda, it is easy to find business signs that contain Kriol, such as Figure 6, which is a billboard-sized sign for a national poultry wholesaler and which contains the Kriol phrase Dis da fi wi Chikin! ‘This is our chicken!’

---

32 Hopkins is a small Garifuna village in Stann Creek district, located centrally between Belize City and Punta Gorda.

33 This is a nationwide company, which according to my language consultants, is owned by Belizean Mennonites.
This sign and others like it speak to the fact that there must be an overt kind of prestige to the Kriol, but it is not the same kind of elevated space occupied by Standard English.\footnote{For example, LePage (1992 [1998:75]), as cited in Ravindranath (2009), writes, “the Creoles of Belize said similarly derogatory things about their language within the context of education [they] nevertheless called it Creole and identified themselves, with pride and feelings of superiority, as Creoles.”}

### 6.2 Where is this speaker from?

In addition to the question of where English was appropriate, we asked test participants to identify the region or part of the country that they associated with the recorded speaker.\footnote{See Preston (1989) on perceptual dialectology.} The result here was that Belize City participants very reliably identified the speaker recorded in Belize City, and at the same time, they had more trouble locating the Punta Gorda speaker. Out of 42 participants in Belize City, 32 correctly identified the BC speaker, with only 4 correctly identifying the PG speaker. The speaker from PG was guessed to be from Jamaica, one of the Belizean Cayes, one of the lesser-populated Belizean districts, even from the US—this speaker was generally excluded as an inhabitant of Belize City. This is seen below in Figure 7. The participants from PG, on the other hand, were able to locate the BC speaker 45 percent of the time, with most of these indicating Belize City as the speaker’s origin. This suggests again that the BC variety of speech is at least somewhat recognizable even in southernmost Punta Gorda.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Speaker 1 Correct</th>
<th>Speaker 2 Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG</td>
<td>18/40 (45%)</td>
<td>7/40 (17%)</td>
</tr>
<tr>
<td>BC</td>
<td>32/42 (76%)</td>
<td>4/42 (9%)</td>
</tr>
</tbody>
</table>

Figure 7. Kriol dialect mapping.
Interestingly, the PG participants placed the BC speaker far more accurately than they did the speaker from their own home of Punta Gorda, whom they were only able to locate correctly 17 percent of the time. These results are surprising, but they do support the claim that there is little prestige (or notoriety) associated with the PG Kriol—a claim which is also borne out by the Likert data discussed above—and that BC Kriol is almost three times as recognizable to citizens of PG than their own native Kriol. These results also support the claim that there must be at least two regional varieties of Kriol in coastal Belize, a claim which has not been made elsewhere in the literature. Generally with respect to Belize, a basilect-acrolect creole continuum is assumed, but regional variation is not factored into it.

6.3 What did you first learn to speak as a baby?

With this question, we wanted to determine the native language of the participants. The wording with “baby” was meant to diffuse any prejudices or cultural cringe factor that might exist in case a participant viewed her native language as low prestige. We feared that in such a case participants might be inclined to indicate that their native language was other than it actually was. We also specifically did not mention the terms “language” or “dialect” here, as many Belizeans speak Kriol natively, but believe that it is a broken dialect of English. Thus, we feared the terms “language” and “dialect” could have limited or influenced the responses to this question.

We found a great deal of native language diversity in Punta Gorda with respect to native languages, with the majority of native speakers of Kriol at 18, but 7 native speakers each of the Mayan languages Mopan and Kekchi, as well as a few native speakers each of English, Spanish, and Garifuna. On the other hand, the native language count in Belize City was much less diverse, with 28 native speakers of Kriol, and 11 native English speakers. There were 2 Spanish speakers and 1 Garifuna speaker, with no native speakers of the Mayan languages (see Figure 8.1).

<table>
<thead>
<tr>
<th>Participants</th>
<th>Kriol</th>
<th>English</th>
<th>Spanish</th>
<th>Mopan</th>
<th>Kekchi</th>
<th>Garifuna</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG</td>
<td>18</td>
<td>4</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>BC</td>
<td>28</td>
<td>11</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 8.1. Native language of participants.

We suspect, however, that the report of 11 native speakers of English in Belize City is somewhat inflated. Escure (1997:37) notes that it is often the case that Belizeans do not know the difference between Kriol and English, or “may be unaware that there is any difference at all.” As Kriol is an English-based creole, the distinction between the two, especially in the acrolectal range, must necessarily be quite fuzzy. When this is corrected, as in Figure 8.2 below, the landscape of native languages in the two areas seems much more realistic, with most speakers of Belize City speaking Kriol or Belizean English, but not Spanish or any of
the Mayan languages. Conversely, Punta Gorda shows a wider linguistic range, including native speakers of Spanish and the Mayan languages.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Kriol/English</th>
<th>Spanish</th>
<th>Mopan</th>
<th>Kekchi</th>
<th>Garifuna</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG</td>
<td>21</td>
<td>2</td>
<td>7</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>BC</td>
<td>39</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Figure 8.2. Corrected native languages of participants.

The fact that Punta Gorda shows so much more diversity in reported native languages supports our claims above of PG Kriol as having much more contact with other languages than BC Kriol does. Thus, it is natural that PG Kriol would have undergone a greater degree of change and so be less traditional than BC Kriol—a fact that is strongly supported by the data from the Likert surveys reported in Figure 3.

7 Conclusion

The results of our surveys and qualitative questions invite several conclusions. Foremost among them is the fact that there must be at least two regional varieties of Kriol in Belize, as participants clearly had different attitudes toward the different speakers.

Further, our results show stronger preferences among men for BC Kriol. This preference for the more traditional variety is in line with the general notion that men are less likely to embrace linguistic change (Labov 1990, 2002).

Also noteworthy is the overall indifference for PG Kriol. PG is much more linguistically diverse, and many of our participants were bi- or trilingual, speaking some combination of Garifuna, Maya Mopan, Maya Kekchi, Spanish, or English, in addition to Kriol. This differs markedly from BC, where the majority of speakers control only Kriol and perhaps English. We believe that this polylinguistic context of PG has had an impact on language change there; conversely, the variety spoken in the monolingual BC experiences less contact, changes less, and is thus more traditional and prestigious. This fact fits well with the emerging status of Kriol as a national lingua franca and as a marker of Belizean identity: especially at a time when the newly independent country (1981) is also experiencing high levels of immigration from neighboring Spanish-speaking countries.

We know of at least one additional dimension of variation in Kriol, which appears to be generational. Our basis for believing this comes from discussions that arose during our interviews, where it was mentioned several times that younger Kriol speakers “do not speak Kriol properly” and that they are too heavily influenced by Jamaican Creole. The idea here was
that it was much cooler to “sound Jamaican,” and so young Belizeans tended to gravitate toward that way of speaking.  

Our qualitative data also supported the almost universal agreement among Belizeans to whom we spoke that “real Kriol” is found in Belize City and in the villages in the Belize River valley. This suggests that regional variation does exist and that Belizeans are aware of it. We did not investigate specific lexical or phonological differences between BC and PG; it is enough for the purposes of this study to know that the variation exists and that it is recognized by Belizeans. A goal of later research will be to isolate clear linguistic markers.

8 Acknowledgments

Many people have been important in the undertaking of this work. We have had fruitful discussions with Carol Klee, Mike Linn, Dennis Preston, and Ron Regal. We would also like to thank the audiences at the 2014 annual meeting of the Linguistic Society of America as well as the Berkeley Linguistics Society for much helpful feedback and suggestions; any mistakes herein are no reflection upon them. We are also extremely grateful to our Belizean consultants, who number far too many to list here. Their interest and excitement about Kriol was infectious, and it made working on this project that much more fulfilling. Special thanks to Ms. Leela Vernon, Ms. Yvette Herrera, and Ms. Silvana Udz for very useful discussions of the language, culture, and history of Belize. Thanks also to Nigel Encalada at the National Institute of Culture and History in Belize City, and to Professor James Garber in the Department of Anthropology at Texas State University in San Marcos.

9 References


36 This tension between the speech of generations in Belize seems to be ongoing, as is generally the case everywhere else between older and younger generations. For example, Greene (1999: 120) writes that in 1983 she observed older Belizeans in Belize City who were critical of the speech of younger Belizeans, who used “Michael Jackson-speak,” which was Kriol with the influence of “hip” terms such as bad to mean ‘good’ and dig to mean ‘understand’, pad ‘living quarters’, and huk-op ‘to have sexual intercourse’.


Implicative organization facilitates morphological learning

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1 Introduction

An essential challenge that faces language-learners is linking wordforms to meanings. In many languages, this requires them to make generalizations across related wordforms that convey different morphosyntactic properties. For example, all of the Russian forms below mean ‘factories’, but a learner must infer the relation between each specific form and its morphosyntactic content.

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>zavodi</td>
<td>zavodi</td>
<td>zavodov</td>
<td>zavodam</td>
<td>zavodax</td>
<td>zavodam’i ‘factories’</td>
</tr>
<tr>
<td></td>
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</table>

One dimension of this task is segmentation. For example, how can learners separate the stems from the affixes that signal a particular morphosyntactic property? If this information was all that learners had, they might hypothesize that zavod has the lexical meaning ‘factory’, and the –ov suffix signals genitive plural. A large body of experimental research addresses this syntagmatic, structural challenge of identifying recurrent partial forms (e.g., Saffran et al. 1996; Finley and Newport 2011; Aslin and Newport 2012).

However, there is also a paradigmatic aspect to the problem. For example, the table below shows some alternative possibilities for how a plural form might be realized with different cases in Russian (Baerman et al. 2009).

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>zavodi</td>
<td>dela</td>
<td>strani</td>
<td>kost’i</td>
<td>‘factories’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dela</td>
<td>strani</td>
<td>kost’i</td>
<td>‘things’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>del</td>
<td>stranam</td>
<td>kost’ej</td>
<td>‘countries’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>delam</td>
<td>stranam’i</td>
<td>kost’am</td>
<td>‘bones’</td>
<td></td>
</tr>
<tr>
<td></td>
<td>delax</td>
<td>stranam’i</td>
<td>kost’ax</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>delam’i</td>
<td>stranam’i</td>
<td>kost’am’i</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Languages often use different markers to signal the same morphosyntactic distinction, such as a particular case and number. Furthermore, a single marker can be used to signal different properties for different lexical items. If learners focus only on segmentation, they will be faced with sets of affixes that each correspond to multiple meanings, and sets of meanings that correspond to multiple affixes. The task thus involves learning not only segmentation, but also paradigm organization: the word- or subclass-specific correspondences between markers and meanings.

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Given this task, a crucial component is to identify the formal pattern that each lexical item uses to signal different properties. For example, in the paradigm above, a language-user must determine if a new word should be realized according to the inflectional patterns of zavodi, dela, strani, kost’i, or another pattern entirely.

In identifying a word’s case-marking pattern, some forms of the word will be more useful than others. For example, the form dela is very useful. If a learner encounters an accusative plural form ending in –a, they can be completely certain about the other plural forms of this word: they must follow the dela pattern in the second row above. All other accusative plural forms end with –i, which means that all other patterns can be eliminated as possibilities if the accusative plural is an –a form. An accusative plural dela form is thus a perfectly diagnostic form, because this form alone can be used to predict the other forms for this lexical item. There is an implicative relation between this form and other forms of a word: accusative plural dela implies genitive plural del and nominative plural dela.

On the other hand, if a learner encounters one of the locative plural forms ending in –ax, that form is unhelpful in identifying the other case-marked forms that a word should take. Every pattern uses –ax to signal locative plural. Consequently, none of the locative plurals are diagnostic forms for their patterns.

Implicative relations provide a useful source of information for learners who must identify the formal patterns of new words. Furthermore, the analysis of systems on the basis of such relations is a key component of word-and-paradigm morphology (see Blevins (to appear); Stump and Finkel 2013). Recent work quantifies the extent to which implicative relations reduce the uncertainty associated with predicting a form of a word given another form of the same word, and explores the consequences of this uncertainty for inflectional paradigms (Ackerman et al. 2009; Bonami et al. 2011; Sims 2011). For example, Ackerman and Malouf (2013) show that, in a cross-linguistic variety of complex morphological systems, any given form is much more diagnostic of its correct pattern on-average than one might expect if existing markers had been assigned to their patterns at random. Implicative relations thus significantly reduce the apparent complexity of these systems, and would improve the ability of language-users to learn and generalize morphological paradigms.

1.1 The current study

This study evaluates whether learners use intra-paradigm implicative relations to identify the other forms that a word takes. If a learner knows the relevant paradigm and encounters a diagnostic form of a word, they should be able to infer the other forms that it implies (see also Brooks et al. 1993; Frigo and MacDonald 1998).

This hypothesis is tested using two artificial grammar experiments, in which experimental participants first learned an artificial number-marking paradigm through trial-and-error. After exposure to the the full paradigm, participants were presented with new wordforms that they had not previously encountered, and were asked to generate related forms of the same word. The prediction is that if participants are first presented with a diagnostic form, they should be able to correctly produce a related form that is implied by the diagnostic form. On the other hand, if the form that they first encounter is not diagnostic, they should be unable to reliably produce a correct related form.
2 Experiment 1

2.1 Methods

2.1.1 Participants

39 individuals were recruited from the UC San Diego community, and received partial undergraduate course credit in exchange for participation. Participants were between 18–33 years old (mean 21). 35 reported having excellent, native, or native-like knowledge of English; and 23 reported having excellent, native, or native-like knowledge of a non-English language (including 7 Spanish and 4 Korean speakers).

2.1.2 Procedure

The experiment had a training phase and a testing phase. In the training phase, participants were asked to learn how to mark a variety of familiar household objects for number (singular, dual, and plural) in an alien language. In the testing phase, participants were asked to produce number-marked forms of household objects that they had not previously been trained on. Participants were seated at a computer in a quiet room. All instructions and trials were shown on the screen using the PsychoPy experiment presentation software (Peirce 2007), and participants typed free written responses with the keyboard.

2.1.3 Number paradigm

Items Word stems were the English singular forms of common household objects, such as table, chair, and bed. Five nonce syllables from the ARC Nonword Database (Rastle et al. 2002) were assigned to be inflectional markers for singular, dual, and plural wordforms in two subclasses. For example, the singular marker for Subclass 1 might be yez. A stem was inflected for number by concatenating the appropriate marker to the end. For example, the inflected singular form of table might be table-yez, or the inflected dual form of chair might be chair-guk.

As mentioned, the number-marking paradigm had two subclasses. For two numbers, the subclass of the stem determined which of two markers (allomorphs) should be used. The third number was always indicated with the same marker, regardless of the stem’s subclass. Table 1 shows a sample realization of the number-marking paradigm used in the experiment. In this version, singular and dual forms have different markers depending on the subclass, whereas the plural form is marked with –lem in both subclasses.

The number-marking paradigm was designed to have a structure so that only some markers reliably predicted a referent’s subclass membership. In other words, only some number markers could be used to predict the other markers that a given stem would be inflected with. The hypothesis is that when participants encounter a new word that has a number-marker that predicts subclass membership, they should be able to produce the correct number-markers for that word in its other forms. When participants encounter a new word with a number-marker that does not predict its subclass, they should have only a 50% chance of correctly guessing another marker.
Table 1: Sample number-marking paradigm that participants saw in Experiment 1. Objects with English names were randomly assigned to each subclass of markers.

<table>
<thead>
<tr>
<th>Subclass</th>
<th>SINGULAR</th>
<th>DUAL</th>
<th>PLURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>table-yez</td>
<td>table-cav</td>
<td>table-lem</td>
</tr>
<tr>
<td>2</td>
<td>chair-raf</td>
<td>chair-guk</td>
<td>chair-lem</td>
</tr>
</tbody>
</table>

**Randomization**  There were 30 possible objects that were used in the experiment. For each participant, these objects were randomly divided into two subclasses which comprised 15 stems each. During the training phase, each participant learned the correct inflections for a random subset of six of the 30 stems, with three per subclass.

For each participant, the five number-markers were randomly assigned to the cells, although the structure of the paradigm was always the same. For example, one participant might see –yez and –taf as the singular markers, with –lem as the plural marker, as in the sample paradigm. Another participant might see –lem and –taf as the singular markers, and –yez as the plural marker. Each participant thus saw a different realization of the paradigm.

As noted above, two numbers had unique markers for each subclass, and one number had the same marker for both subclasses. The number that had the same inflectional marker in both subclasses was randomly selected for each participant. For example, unlike the sample realization in table 1, a participant might encounter a version in which all of the stems take the same singular marker, but the plural form has a different marker depending on the subclass that the stem belongs to.

**Implicative organization**  Some markers were fully diagnostic of subclass membership once a participant had learned the paradigm structure. For example, in the sample realization, if a participant learns that table is written as table-yez when table is singular, they can predict that it should be written as table-cav when table is dual. The –yez marker only appears in Subclass 1, so the participant can infer that if a stem takes the –yez marker, it must belong to Subclass 1. Therefore, it should take the other markers that belong to Subclass 1. A marker that can be used to predict subclass membership of a stem is thus a diagnostic form.

Note that, to make this generalization, it is not necessary to infer the existence of subclasses per se and memorize their markers. If a participant knows that all of the stems that are marked with –yez in the singular are also marked with –cav in the dual, then they can reasonably infer that a new word that takes –yez in the singular should also take –cav in the dual. There is thus a strong implicative relation where –yez → –cav.

On the other hand, the marker that appears in both subclasses cannot be used to diagnose subclass membership. If a participant learns that shoe is written as shoe-lem in the plural, they cannot use that fact to determine whether shoe belongs to Subclass 1 or 2, since –lem is used to mark plural number in both subclasses. A participant will have observed that every stem takes the –lem marker in the plural, and therefore there is no implicative relation in which –lem predicts either of the singular or dual markers.
2.1.4 Instructions

Participants were asked to learn, by trial-and-error, how a group of aliens referred to different numbers of objects in their language. They were given an example about English balloons and geese to sensitize them to the possibility of different number-marking patterns, and were told that two balloons might be referred to as a pair of balloons (in contrast with just balloons) to prepare them for the dual–plural distinction that is not inflected in English.

2.1.5 Training phase

In the training phase, participants learned how to add markers to stems to inflect them for singular, dual, or plural number.

In each trial of the training phase, participants saw one, two, or many black-and-white line drawings of one of the six training objects. They were asked to tell the aliens what they saw on the screen. For example, they might see two images of a chair on the screen. With the paradigm realization in table 1, a correct response was ‘chair-guk’, and an incorrect response was anything else. Participants were only able to type lower-case letters and hyphens, and pressed the enter key to indicate that they had completed their response.

After giving a response, participants were immediately told whether they were correct or not. If they answered correctly, they also saw a smiling cartoon face for two seconds. Participants then saw the image again along with the correct answer, which appeared for six seconds if they answered incorrectly, or for only three seconds if they answered correctly. They also received 100 points for each correct answer, and the total number of points earned was displayed in the top right throughout the training phase.

Each training object appeared with each number (singular, dual, or plural) in one trial per training block. The order of trials was randomized within each block. There were five training blocks, which comprised 90 training trials in total (6 training stems \times 3 numbers \times 5 blocks). Participants were given a break between each block for as long as they wanted, although most chose to continue the experiment immediately.

2.1.6 Testing phase

Once they had completed the training, participants saw a second set of instructions. They were told that the aliens wanted to see how they could do on new objects that they’d never seen before. In each trial of the testing phase, participants saw one of the remaining 24 objects that they had not seen during training. On the left side of the screen, they saw one, two, or many line-drawings of the object (e.g., a phone). They were shown the correct number-marked form for that stem (e.g., ‘phone-guk’), and told that this form (the GIVEN FORM) is what the aliens would say to refer to the object(s) on the left side of the screen.

After a three second pause, a different number of line-drawings of the same object appeared on the right side of the screen. Participants were asked to tell the aliens what they saw on the right side (the TARGET FORM). They were not explicitly told to use the given form to predict the target form. However, in the instructions before the testing phase, they were encouraged to think about what they had learned if they were not sure of the correct response.
Figure 1: Mean accuracies at guessing the correct target form after being presented with a diagnostic or non-diagnostic given form in each testing trial.

Each of the 6 possible relations (e.g., given form is singular, target form is dual; given form is singular, target form is plural; etc.) was tested for both subclasses. Tests appeared in a random order within each block, and there were two testing blocks. Participants saw each of the 24 testing objects on exactly one testing trial (6 relations $\times$ 2 subclasses $\times$ 2 blocks).

### 2.2 Analysis

A mixed-effects logistic regression was used to model whether or not participants produced a correct target form after seeing a particular given form during the testing phase. The variable of interest was whether or not the given form implied the target form (IMPLICATIVE-RELATION). The prediction was that if the given form implied the target form, participants should produce more correct targets than if the given form did not imply the target form. For example, in table 1, participants should be able to guess that lamp-cav is the dual form if they are given lamp-yez as the singular form. They should not be able to guess that lamp-cav is the dual form if they are given lamp-lem as the plural form, since –lem does not allow participants to identify the subclass that lamp belongs to.

It is trivially true that each of the singular and dual forms in table 1 imply the plural form, since –lem must always be the plural form. Therefore, trials in which there was only one possible target marker (because it was used by both subclasses) were excluded from the analysis. In fact, participants produced the correct form in over 98% of such trials. A chart showing the relative accuracy of participants under each condition appears in figure 1.
2.3 Results

As predicted, **Implicative-Relation** was highly significant, and had a large effect on the accuracy of responses ($\beta = 2.20, z = 4.77, p < 0.0001$). Participants guessed target forms significantly more often when they first encountered a wordform that could be used to predict subclass membership. A summary of the random effects appears in table 2.

Additional analyses indicated that participants performed equally well on dual forms as on singular and plural (even though dual is not distinctly inflected in English), and that the regression was not significantly improved by adding random or fixed parameters for stems, markers, or forms. Participants who reported native, native-like, or excellent proficiency in a language with regular morphological subclasses (such as noun gender) did not perform significantly better or worse in the testing phase than other participants.

3 Experiment 2

The first experiment had a very simple structure. There were two symmetrical subclasses, and implicative relations always went in both directions: if $-yez$ predicted $-cav$, then $-cav$ also predicted $-yez$. The structure was as simple as possible for the design.

Natural-language paradigms often have much more complex structures. A second experiment was conducted with two asymmetrical paradigms in order to evaluate whether participants would be still able to take advantage of implicative relations when the structure is more complex.

3.1 Methods

The methods of Experiment 2 were the same as Experiment 1, except as described here.

3.1.1 Participants

60 individuals were recruited from the UC San Diego community, and received partial undergraduate course credit in exchange for participation. Participants were between 18–25 years old (mean 21). All participants reported having excellent, native, or native-like knowledge of English; and 42 reported having excellent, native, or native-like knowledge of a non-English language (including 13 Spanish, 10 Mandarin, and 5 Vietnamese speakers). 32 participants were randomly assigned to learn the **Single Principal Part** paradigm, and 28 were assigned to the **Asymmetrical** paradigm, described below.
3.1.2 Procedure

In this experiment, there were 27 common English household objects that were used as stems. Nine objects were randomly assigned to each of three subclasses. During training, participants learned the correct inflections for three stems per subclass. The remaining 18 stems were held in reserve for the testing phase. In the testing phase, each of the 6 possible relations was tested for the three subclasses in one trial each, using each of the stems that the participant had not seen during training.

3.1.3 Number paradigms

Two paradigm structures were designed to evaluate whether it was easier for participants to identify and take advantage of diagnostic forms when the markers for one number could consistently be used to predict other forms. The Single Principal Part paradigm was designed so that, regardless of subclass, the forms for one number (e.g., singular) were always diagnostic of other forms and of subclass membership. In the Asymmetrical paradigm, this was not the case.

A sample realization of the Single Principal Part paradigm structure appears in 3a, and a sample realization with the Asymmetrical paradigm appears in 3b. In 3a, the singular number-marker in each subclass is a reliable predictor of other forms. In 3b, there is no number where each marker is reliably diagnostic in every subclass.

Randomization of stems, markers, and numbers was done as described in section 2.1.3. Thus, each participant saw a different realization of one of the two paradigms, but as before, the paradigm structure was always the same.

There were two features of these paradigms that could help participants choose the appropriate marker for a specific number and stem: marker frequency and implicative relations.

Marker frequency  In these paradigms, some markers are more frequent than others. For example, –cav marks dual in two of the three subclasses (in both paradigms), whereas –guk marks dual in only one subclass.

Implicative organization  As before, some markers implied other markers. For example, if a participant who has learned the Single Principal Part sample paradigm knows that a wordform in the singular is marked with –taf, they can be sure that the same wordform is marked with –guk in the dual and –lem in the plural. The marker –taf only occurs in Subclass 1, so knowing that a word takes –taf is enough to determine that that word belongs to Subclass 1 and therefore must take the other markers that are used in Subclass 1.

On the other hand, if they only know that a wordform in the plural is marked with –lem, they cannot diagnose that word’s subclass membership. They do know that –lem is not the plural marker in Subclass 3 (that is –nup), but they do not know whether a wordform marked with –lem belongs to Subclass 1 or 2, because –lem occurs in both subclasses. Thus, some markers are diagnostic of subclass membership and other markers, and some are not.
Implicative organization facilitates morphological learning

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>DUAL</th>
<th>PLURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subclass 1</strong></td>
<td>chair-taf</td>
<td>chair-guk</td>
</tr>
<tr>
<td><strong>Subclass 2</strong></td>
<td>bed-yez</td>
<td>bed-cav</td>
</tr>
<tr>
<td><strong>Subclass 3</strong></td>
<td>table-seb</td>
<td>table-cav</td>
</tr>
</tbody>
</table>

(a) Sample Single Principal Part paradigm.

<table>
<thead>
<tr>
<th>SINGULAR</th>
<th>DUAL</th>
<th>PLURAL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subclass 1</strong></td>
<td>chair-taf</td>
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</tr>
<tr>
<td><strong>Subclass 2</strong></td>
<td>bed-yez</td>
<td>bed-cav</td>
</tr>
<tr>
<td><strong>Subclass 3</strong></td>
<td>table-yez</td>
<td>table-cav</td>
</tr>
</tbody>
</table>

(b) Sample Asymmetrical paradigm.

Table 3: Participants saw a paradigm realization with either the Single Principal Part or the Asymmetrical structure in Experiment 2.

### 3.2 Analysis

A mixed-effects logistic regression was used to model whether or not participants produced a correct target form after seeing a particular given form of a word during the testing phase. As before, the variable of interest was whether or not the given form implied the target form. The primary hypothesis is that participants should guess the correct target form more often during the testing phase when the given form implies the target form.

For this analysis, an additional variable was included in the regression: whether the target form was a frequent marker (such as –cav in the sample paradigm) or whether it was not. The expectation is that participants should be biased toward guessing more frequent markers, all else equal, and so should guess correctly more often when the target form is a more frequent marker.

The regression also included a variable for paradigm condition (Single Principal Part or Asymmetrical) and pairwise interactions (plus the three-way interaction) between each of the variables. Finally, the model included random per-subject intercepts and slopes for each fixed effect.

### 3.3 Results

Paradigm condition, and all of the interactions except for the Implicative-Relation x Frequency interaction, were found to be non-significant. Therefore, these fixed effects and their corresponding random effects were removed from the model. This did not affect the significance of the remaining variables.

The final fixed effects summary appears in table 4, and a summary of the random effects appears in table 5. As before, Implicative-Relation had a significant positive effect on the probability of correctly guessing a target form. The effect size was much smaller than in the simpler paradigm in Experiment 1.

Two other effects were significant. First, participants were much more likely to guess frequent markers. Second, there was a significant negative interaction for having a diagnostic form when the target form was a frequent marker. The negative effect size indicates that when the given form implies the target form but the target form is frequent, participants failed to guess the target form as well as they should have.

Thus, participants did significantly better when the given form implies the target form, but only when the given form predicts one of the infrequent markers. To verify this interpretation, two alternative models were fit only to trials in which the target was frequent or.
Figure 2: Mean accuracies at guessing the correct target form after being presented with a diagnostic or non-diagnostic given form in each testing trial.

![Graph showing accuracy vs marker frequency for Experiment 2.](image)

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>SE</th>
<th>z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implicative-Relation</td>
<td>0.87</td>
<td>0.32</td>
<td>2.72</td>
<td>0.0066</td>
</tr>
<tr>
<td>Frequency</td>
<td>2.11</td>
<td>0.38</td>
<td>5.55</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Implicative-Relation x Frequency</td>
<td>-1.42</td>
<td>0.50</td>
<td>-2.86</td>
<td>0.0043</td>
</tr>
</tbody>
</table>

Table 4: Fixed effects summary for Experiment 2.

infrequent. These models confirmed that the effect of Implicative-Relation was significant when the target form was an infrequent marker ($\beta = 0.84$, $z = 2.75$, $p < 0.01$) but was non-significant when the target form was a frequent marker ($\beta = -0.55$, $z = -1.81$, $p > 0.05$). The chart in figure 2 shows the relative accuracy of participants at guessing the correct target form under different conditions.

Finally, to verify that this apparent effect would not have arisen from a simpler strategy by the participants (Lignos 2013), 100 simulations of the experiment were conducted under the assumption that participants were probability-matching (i.e., selecting the more frequent of the two possible number-markers $2/3$ of the time, and the less frequent one $1/3$ of the time) rather than using diagnostic forms. Under this assumption, Implicative-Relation and its interaction with frequency were not significant more often than expected by chance, which suggests that the significant effect shown in figure 2 would not have occurred under this simpler strategy.
4 Discussion

An implicative relation between wordforms exists when one form of a word allows the language-user to determine another form of the word that is marked for a different morphosyntactic property. The main result of the experiments presented here is that artificial language-learners were able to identify and take advantage of implicative relations between number-markers.

In Experiment 1, participants were more successful at guessing a second form of a word if they first encountered a diagnostic form that implied the target form, as compared to when they encountered a non-diagnostic form. In Experiment 2, this was also true, but only when a given diagnostic form implied that the correct form was one of the infrequent forms.

4.1 Accounting for the differences between frequent and infrequent targets

As noted in section 3.1.3, participants had two sources of information in Experiment 2 to help them choose the correct marker. In some cases, knowledge of one form provides enough information to predict the required form. For example, if the participant knows that a word takes the \(-taf\) marker in the singular, then that implies that the word must take the \(-guk\) marker in the plural.

However, even when not given a diagnostic form, learners might make use of their knowledge of relative marker frequency. As a default strategy, if a learner knows nothing else about the word, it is reasonable to guess that the appropriate marker is the more frequent of the two possibilities. For example, if a learner had to guess a dual marker for a word that they had never seen before, they should guess that the word takes \(-cav\), just because it is a more common form.

One might expect learners to follow the first strategy—the use of predictive relations—when it is available to them, and to only fall back on relative marker frequencies when they are not given a helpful diagnostic form. However, the participants’ strategy was not optimal in this respect.

The results of Experiment 2 indicate that when provided with a diagnostic form that predicts one of the infrequent markers (like \(-taf\) or \(-guk\)), participants did choose the infrequent target significantly more often than they would otherwise. In this case, they did take advantage of the useful information that a given wordform provides about another form of that word. They did not perform as well as they could have, but this strategy did significantly improve their accuracy.
On the other hand, when given a diagnostic form that predicts a frequent marker, the participants did not behave in the same way. In this case—when the diagnostic form implies a frequent marker—participants were just as likely to choose the frequent marker as if they had no implicative information at all. They did not take advantage of the helpful relation if it implied a frequent marker that they were already likely to guess anyway.

In this experiment, the participants may have learned a strong prior preference for the frequent marker—their default guess is the more common marker. When they receive extra information from a diagnostic form that indicates that they should actually select the infrequent marker, they pay attention to that information. On the other hand, if they get extra information that confirms their expectation for the frequent marker, that does not make a large difference in their preferences.

In fact, this pattern can be seen in Experiment 1 as well. If learners use only the implicative relations and ignore other sources of information, they should be perfectly accurate when they encounter a diagnostic form. However, their accuracy was actually closer to 75% on such trials (see figure 1). One way of describing this behavior is that the participants learned to have an equal prior expectation for each number-marker, since the markers were equally frequent. When they get a predictive form, they adjust their expectation by some amount to favor the predicted marker, but not as much as they would if they were putting complete faith in the reliable implicative relations.

As a second possible account for the results of Experiment 2, Yurovsky et al. (2013) demonstrate that adults suffer from a dilution effect when they are presented with two sources of evidence that point toward the same outcome, but one piece of evidence is much stronger than the other. In this scenario, infants behave as though they have only the single stronger piece of evidence. However, the same situation actually weakens adults’ confidence in the outcome: they average the strength of the two pieces of evidence, and behave as though the total evidence is not as strong as the stronger piece of evidence alone.

This phenomenon might describe the results of Experiment 2. When confronted with a stronger and a weaker source of evidence (implication and frequency, although it is not necessarily clear which is stronger) that both point toward the same (frequent) target, participants are less confident in that target than if they had only one source of evidence. Since infants do not suffer from the dilution effect, the results of Experiment 2 might not be the same if it were possible for infants to take the experiment.

Finally, a third possible account might be that participants were learning a different kind of relation. In Experiment 2, they may have learned to pair suffixes together (e.g., \(-taf\) goes with \(-guk\)). They might have avoided suffix pairs if one of the pair members also occurs with another suffix (e.g., \(-cav\) goes with \(-lem\), but also with \(-nup\)). In other words, they only acquired bi-directional implicative relations. Future experiments should test this hypothesis.

4.2 Relation to earlier work on artificial subclass acquisition

Previous experimental work has argued that learners are unable to use diagnostic forms to predict subclass membership, unless the learned stems have redundant phonological or semantic cues to subclass membership (Brooks et al. 1993; Frigo and MacDonald 1998; Gerken et al. 2009). The results of the current study conflict with this claim. In both experiments, participants demonstrated knowledge of formal paradigmatic relationships, despite experi-
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mental randomization that was designed to avoid redundant information that would signal subclass membership.

Some researchers have argued that enriching word classes with alternative kinds of redundancies, such as an association between each subclass and the semantics of the items in that subclass (Braine 1987; Ouyang et al. 2012), can allow learners to acquire morphological subclasses or relations within subclasses. There is also evidence that learners successfully make paradigmatic inferences in artificial syntactic paradigms that lack redundant cues (Mintz 2002; Reeder et al. 2013). Together with the present results, these findings support a view in which (short-term) paradigm learning is enabled simply whenever memory demands are sufficiently low (Frank and Gibson 2011). Previous work (e.g., Frigo and MacDonald 1998; Ouyang et al. 2012) lowered memory demands through additional phonological or semantic coherence in subclasses.

In the current experiments, a few methodological factors kept the memory demands low. First, the learning target was very narrow—only the new suffixes and their relations had to be learned, and there were relatively few items per subclass during training. Second, the task involved inferring relations among actual referents, rather than purely among abstract linguistic labels. These referents were presented prior to their labels, and this presentation style is known to enhance association learning (Ramscar et al. 2010). Furthermore, participants were required to actively produce a free response to every item, from the very start of the task. Participants received two kinds of affective feedback following successful responses. Many participants reported that they enjoyed the task and the challenge of learning a new language.

4.3 Summary

This study investigated whether learners use implicative relations to identify the other forms that a word takes. Evidence from two experiments suggest that artificial paradigm organization is salient to morphological learners, and that they do use intra-paradigm relations to correctly infer related wordforms. This supports typological research that highlights the importance of implicative relations in the formal structure of morphological systems. Future work should investigate the interaction of this kind of structure with the relative frequencies of markers and subclasses, as well as the different strategies that L1 and L2 language-learners use to acquire and represent implicative relations.

References


The Prosody of Split and Glued Verb Constructions in Chácobo (Pano)

ADAM J. TALLMAN
The University of Texas at Austin

0  Introduction

Chácobo is a southern Panoan language of the northern Bolivian Amazon. As with other Panoan languages, the verb is polysynthetic and highly suffixing (cf. Loos 1999 and Fleck 2013 for overviews of the family). However, the verb complex can be divided into two types of constructions, one which occurs with all morphemes bound together (“glued” construction), and another which is split into two pieces interrupted by a subject noun phrase (“split” construction). In this paper I give a brief description of the alternation between what I call “glued” and “split” constructions in the verb complex. I provide a unified description of the verbal prosody in the sense that the analysis does not require different principles of prosodic word construction depending on the construction type. I argue that much of Chácobo morphology consists of prosodic clitics in the sense of Selkirk (1996) and Anderson (2005). In addition to assuming that Chácobo has internal and free prosodic clitics, it also constructs prosodic words from clitic combinations without a stem.

This paper is based on 5 months of fieldwork with the Chácobo in Alto Ivón, Riberalta and Las Limas in the summers of 2011, 2012 and 2013, and is part of a larger project that aims to write a descriptive grammar of the language (cf. Fleck 2013 for an overview of the documentation efforts on Panoan languages).

1  The synthetic Panoan verb

1.1  Morphosyntax

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2 Many thanks go to my Chácobo consultants and teachers Caco Moreno, Gere Ortiz, Pae Chávez, Mahua Chávez, Milton Ortiz, and Mario Chávez. I would also like to acknowledge the helpful comments I received on this paper from Megan Crowhurst and other BLS participants. Additional thanks go to Antoine Guillaume for insightful comments on this paper. All mistakes are my own.
Panoan languages and languages of Amazonia generally are described as having syntax-like morphology which includes variable morpheme ordering, affix reduplication and a high degree of compositionality (Guillaume 2010: 20) for Cavineña; Payne (1990: 227-230) for Yagua and Capanahua; Aikhenvald (2012: 134-5) for Amuesha, Urarina and Tariana). Chácobo is no exception in this regard.

(1) VARIABLE MORPHEME ORDERING

a. \texttt{hābā-tīkī-ki}
run-AGAIN-CMPL
‘He ran again.’

b. \texttt{hābā-tīkī-yāmā-ki}
run-AGAIN-NEG-INCL

c. \texttt{hābā-yāmā-tīkī-ki}
run-NEG-AGAIN-INCL
‘He doesn’t run again.’

(2) REDUPLICATION

a. \texttt{kā-yāmā-yāmā-ki}
go-NEG-NEG-CMPL
‘He didn’t go. (It’s impossible that he went.)’

b. \texttt{kā-tāpī-tāpī-ki}
go-FAST-FAST-CMPL
‘He went fast (without thought).’

c. \texttt{kā-hōnā-hōnā-ki}
go-COME-COME-CMPL
‘He came (without rest).’

d. \texttt{mī-ā tsāyā-fārī-fārī-ki}
2SG-ACC see-CRAS-CRAS-INCL
‘I will see you (the day after tomorrow).’

Chácobo seems to go even further than other Amazonian languages in having syntax-like properties in its morphology. The verb complex can be divided into two construction types. One construction corresponds to a canonical Panoan verb, with all functional material bound to the root (the “glued” construction). The other construction “splits” the verb complex into two pieces. In the “split” verb construction the verb stem and some derivational material occur discontinuous with the final TAM affixes, separated by a subject noun phrase. An example of the “glued”

---

3 Chácobo has an ergative alignment split by noun type (full noun or pronoun), aspect and word order (cf. Córdoba et al. 2012). The ergative is marked by an H-tone being docked to the final syllable on the right-most edge of the
construction is given in (3a) and the “split” construction in (3b) (the pieces of the verb complex are underlined) (more detail is given in §2).

(3)  

a. GLUED CONSTRUCTION

\[
\begin{align*}
\text{yōsa} & \quad [\, \text{hōni titikaå} \,]_{\text{SUBJ}} \quad [\, \text{tsāyà-tìki-yam-ì} \,]_{\text{v}} \\
\text{woman} & \quad \text{man} \quad \text{tall.ERG} \quad \text{see-AGAIN-HEST-CMPL}
\end{align*}
\]

‘The tall man saw the woman again yesterday.’

b. SPLIT CONSTRUCTION

\[
\begin{align*}
\text{yōsa} & \quad [\, \text{tsāyà-} \,]_{\text{v}} \quad [\, \text{hōni titikaå} \,]_{\text{SUBJ}} \quad [\, \text{wā-yam-ì} \,]_{\text{v}} \\
\text{woman} & \quad \text{see-AGAIN} \quad \text{man} \quad \text{tall.ERG} \quad \text{v-HEST-CMPL}
\end{align*}
\]

‘The tall man saw the woman again yesterday.’

In Panoan languages the synthetic verb complex usually corresponds to the domain of the prosodic word (Fleck 2003 for Matses; Elias-Ulloa 2006, 2011 for Shipibo-Konibo; Zariquiey 2011 for Kashibo-Kakataibo). The split construction clearly complicates this analysis since prosodic domains such as the PWd cannot be discontinuous (e.g. Selkirk 1984, Nespò & Vogel 1986). Furthermore, the distribution of H-tones in the verb complex, the primary markers of prominence, suggests that an analysis where the entire verb complex is one PWd is problematic for reasons described in the following section.

1.2  Prosody

An issue that is addressed less in the literature on the purportedly exotic characteristics of Amazonian morphosyntax is that of prosodic organization (Russell 1998 for a critique). In Hyman’s (2006, 2011) word prosodic typology, culminative and obligatory prominence over a word is one of the defining properties of a stress system, but Chácobo does not obviously conform to this. Prominence (realized as surface H tones) are not always culminative even when the same morphemes are involved. Different orderings of \textit{tìki- AGAIN tapi- FAST} can result in one (4a) and two (4b) high tones in the verb complex.

(4)  

a. CULMINATIVE H-TONE

\[
\begin{align*}
\text{hābā-tìki-tàpi-ì} \\
\text{run-AGAIN-FAST-INCL}
\end{align*}
\]

b. NON-CULMINATIVE H TONE

\[
\begin{align*}
\text{hābā-tàpi-tìki-ì} \\
\text{run-FAST-AGAIN-CMPL}
\end{align*}
\]

‘He doesn’t run again.’

---

noun phrase (Valenzuela & Iggesen 2007). In (3) the high tone is docked to the adjective \textit{titikaå ‘tall}, however, if the word order was reversed the head of the noun phrase \textit{hōni} would receive this high tone.
In the following analysis I argue that such properties require parsing more than one PWd over the verb complex. The analysis is furthermore necessitated because of the split verb construction described above. Furthermore, I analyze the morphology of the verb complex as composed of prosodic clitics (cf. Selkirk 1996, Anderson 2005). This paper is partly concerned with characterizing what types of prosodic clitics need to be in the verb complex. In §2 I give an overview of the morphosyntax of the verb complex. §3-4 then gives a brief overview of the suprasegmental properties of Chácobo; §3 focuses on the interaction between metrical and tonal properties adopted in the current analysis; §4 focuses on describing the basic suprasegmental properties of the verb complex. §5 gives a prosodic analysis of the phenomena described in the previous section. §6 gives an overview of the paper and emphasizes areas of future research.

2 The clitic based morphology of the Chácobo verb

The verb complex in Chácobo can be roughly schematized as in (5) below. Bold positions indicate slots that are obligatorily filled. A verb must contain minimally a root and a final aspect marker (Zingg 1998).

(5)  
i. (BODY PART PREFIX) 
ii. ROOT 
iii. (VALENCE/ASPECT) 
iv. (ADVERBIAL/MODAL/MOOD/NEGATIVE
   /ASSOCIATED MOTION/FUTURE TENSE) 
 v. (TENSE) 
 vi. ASPECT/MODAL

As we will see, the situation is considerably more complex than what is given in (5), especially when we consider the split verb construction and variable morpheme ordering (a more detailed template is given below).

2.1 Split and glued verb constructions

2.1.1 Split by noun phrases

As stated in §1, Chácobo verb complexes can be divided into two constructions; one is a split construction and the other is a glued construction. In the split construction the verb root and some valency changing material appear discontinuous with final TAM enclitics. When the verb construction is transitive, a morpheme wa- is bound to the TAM material.4 Examples contrasting the intransitive-transitive and glued-split constructions are given below.

---

4 Alternatively wa- could be regarded as a carrier and host of the TAM material.
(6) INTRANSITIVE

a. INTRANSITIVE GLUED
Adam go-NEG-AGAIN-CMPL

b. INTRANSITIVE SPLIT
Adam go-NEG Adam AGAIN-CMPL

‘Adam didn’t go again.’

(7) TRANSITIVE

a. TRANSITIVE GLUED
woman man tall-ERG see-AGAIN-HEST-CMPL

b. TRANSITIVE SPLIT
woman see-AGAIN man tall-ERG v-HEST-CMPL

‘The tall man saw the woman again yesterday.’

The split construction can only contain a subject noun phrase between the two pieces of the verb complex. It is not obviously an instance of noun incorporation because the noun phrase can contain full relative clauses and only the subject can intervene (cf. Mithun 1986). The alternation between glued and split constructions has no obvious semantic function (although it may have an information structure function). The wa- could be regarded as a dummy morpheme and has no obvious semantic function in the split constructions above. The wa- cannot appear when the construction is glued. From this point on I refer to the root as stranded from its aspectual marker, and the aspectual marker as stranded from the root in the split construction.

2.1.2 Split by pronouns

Descriptions of Cháco have made reference to “bound pronouns” (Zingg 1998, Córdoba et al. 2012). Cháco pronouns follow a nominative-accusative alignment. “Bound pronouns” occur between the stem and the final aspect marker. Only subject pronouns (A and S) can surface as “bound pronouns”. Bound pronouns occur in free alternation with preverbal non-bound pronouns. Examples are given below with the “bound pronoun” constructions occurring in the examples in (7-9b).

(8) a. ţ āfi-ki
1SG bathe-CMPL
'I bathed'

b. āfi-ţi-ki
bathe-1SG-CMPL
‘I bathed’

5 No Panoan languages contain noun incorporation to my knowledge, although they do contain instances of body-part incorporation which has an adverbial or verbal classificatory function (cf. Fleck 2006).

6 They also occur in nominative shape without an accusative marker –a.
Although “bound pronoun” constructions have been described separately from the split construction, they are clearly just instantiations of it (with a pronoun splitting the verb complex instead of a full NP). The verb complex is split in the exact same position, and a wa- is inserted in the same environment. The distributional facts are the same as the alternation between the glued and split construction. The orthographic representation commonly given as in (7-8) is somewhat misleading. The word segmentation below could be applied to bound pronoun constructions where the root is separated from the pronoun.

The split construction poses interesting distributional problems for the ordering of verbal morphemes in the verb complex. Panoan languages have a highly complex templatic and suffixal verbal morphology. Which side of the split complex a morpheme occurs on (left, right or both) is a distributional problem for the description of the verb in Chácobo. This issue is briefly discussed in the following section.

2.3 Semi-templatic morphology: Fixed and variable orderings

2.3.1 Fixed affix orderings

Recall from §1 that some affixes in Chácobo can occur in “variable orderings”. This is not true of all morphemes, however. Some occur in a fixed order. Examples in (11) demonstrate that -mís MAL.HAB and -ma CAUS occur in a fixed order with respect to one another. Examples in (12) demonstrates that the final tense and aspect markers occur in a fixed ordering with respect to one another and cannot be interrupted by any other morphemes. (11d) where causative occurs before the habitual applicative is ungrammatical.

(11) MAL.HAB-CAUS
   a. ūfí ʔi=má-kí
       speak-CAUS-MAL.HAB
       ‘He made him speak.’
   b. ūfí-mís-kí
       speak-MAL.HAB-CAUS
       ‘He used to speak badly on behalf of someone.’
   c. ūfí-mís-má-kí
       speak-MAL.HAB-CAUS-CMPL
       ‘He used to make someone speak poorly on behalf of someone.’
   d. * ūfí-má-mís-kí
       speak-MAL.HAB-CMPL
       ‘He used to make someone speak poorly on behalf of someone.’

(10) a. ɨtʃúʂā-kɨ̀
       1SG destroy.TR-CMPL
       ‘I destroyed it.’
   b. ɨtʃūʂà-Ɂɨ́-wà-kɨ̀
       destroy.TR-1SG-v-CMPL
       ‘I destroyed it.’

(9) a. ɨtʃúʂā-kɨ̀
       1SG destroy.TR-CMPL
       ‘I destroyed it.’
   b. ɨtʃūʂà-Ɂɨ́-wà-kɨ̀
       destroy.TR-1SG-v-CMPL
       ‘I destroyed it.’
(12)  TENSE-ASPECT
   a.  tsāyà-tɨ̄ kɨ̀-yàmɨ́-kɨ̀           b. *tsaya-yami-tiki-ki
       see-AGAIN-HEST-CMPL          see-HEST-AGAIN-CMPL
       ‘He saw him again yesterday.’
   c. **tsaya-ki-yami
       see-CMPL-HEST

2.3.2 Variable affix orderings

A larger class of morphemes can be variably ordered. An example is the associated motion morpheme -hōnā- COME.INTR.

(12)  X-ASSOCIATED MOTION ~ ASSOCIATED MOTION-X
   a.  hābà-tiki-hōnà-ki           b.  hābà-hōnà-tiki-ki
       run-AGAIN-COME.INTR-CMPL       run-COME.INTR-AGAIN-CMPL
       ‘He ran (coming in this direction).’

2.3.3 Templatic morphology and the split construction

All morphemes that occur in a fixed order (described in §2.3.1) occur bound to one side and only one-side of the verb complex when it is split. An example of this is with the tense morpheme -yami- HEST. Tense morphemes never occur with the root in the split construction. An example of this is given in (13).

(13)  a.  tsāyà hōnî  wā-yāmî-ki       b. **tsaya-yami honî wa-ki
       see  man.ERG  v-HEST-CMPL            see-HEST  man  v-CMPL
       ‘The man saw him yesterday.’

The morpheme ma- CAUS described in §2.3.1 mirrors yami- HEST in only being able to occur on the left verbal piece bound to the stem in the split construction.

(14)  a.  tsāyà-mā hōnî  wā-ki       b. **tsāyà hōnî  wā-mā-ki
       see-CAUS  man.ERG  v-CMPL            see  man.ERG  v-CAUS-CMPL
       ‘The man made him see someone.’

In contrast all variably ordered morphemes as described above can occur on either side of the split verb complex. An example is given in (15) with the associated motion morpheme bina-COME.TR.

(15)  a.  tsāyà-bīnà hōnî  wā-ki       b. tsāyà hōnî  wā-bīnà-ki
       see-COME.INTR  man.ERG  v-CMPL          see  man.ERG  v-CAUS-CMPL
       ‘The man saw him (while coming this direction).’
A generalization emerges concerning the relationship between variable morpheme order and the distribution of morphemes in the split construction. If a morpheme occurs with a fixed templatic structure it will be bound to one side or the other in the split construction. If a morpheme occurs with variable ordering it can occur on either side of the verb complex in the split construction. Another important point is that variably ordered morphemes cannot be interspersed between fixed ordered morphemes. The fixed ordered morphemes occur fixed in relation to either the root or the obligatory final aspect marker which define the periphery of the verb complex. In other words, variable ordering of morphemes occurs towards the middle of the verb complex, where the split occurs.

This situation can be represented in the template given below. Positions in bold (positions 1 and 10) are obligatory, optional slots are in parentheses (positions 2, 3, 6, 9 and 11) and optional, recursive and variably ordered morphemes occur in curly brackets (positions 5 and 8). Notice that the latter morphemes flank the position of the subject noun phrase in the split construction.

The distributional facts of the Chácobo verb are complex and are not taken up here in detail (cf. Tallman in prep for a more detailed overview). However, the preceding discussion allows us to make one important descriptive generalization concerning the relationship between the split verb construction and variable affix ordering. Fixed templatic style morphology, the type that is associated with morphological word-hood (cf. Dixon & Aikhenvald 2002), breaks down where the verb complex can be split by a subject.

Many criteria for morphological word-hood converge towards a bipartite structure. The criterion of fixedness of order (Mugdan 1994: 2552, Dixon & Aikhenvald 2002: 19) would split the verb complex where variably ordered morphemes occur. The criteria of movability and separability (Boas 1911: 30) would split the verb complex where a subject noun phrase can occur. The minimum free-form criterion (Bloomfield 1933: 178, Hockett 1958: 168) identify the entire verb complex as the word since the stem and final aspect marker are always obligatory. An interesting question is how the prosody is structured under in relation to such a situation.

---

7 Tallman (in prep) gives a more detailed discussion of the criteria for wordhood, affixhood and clitichood in Chácobo.
At the same time, by most criteria, Chácobo’s verbal morphemes should be regarded as clitics. Most of them do not occur in a fixed ordering with respect to each other, and they display a low level of selection. There are no local morphophonological idiosyncracies between the verbal morphemes. Even the obligatory final aspect marker does not need to occur attached to the verb root. A detailed analysis of the morphological status of Chácobo verbal morphology is beyond the scope of this paper. In this paper I am concerned with the status of Chácobo verbal morphemes as prosodic clitics (in the sense of Selkirk 1996 and Anderson 2005). This is taken up in §5 after a review of the prosodic facts in the verb complex is given.

3 Metrical and tonal analysis

The prosodic domains of interest involve suprasegmentals. This section provides a basic description of the relationship between tonal and metrical categories in the language (cf. Hyman 2006 for a typology). The basics of metrical and tonal phenomena are easier to establish with nouns than with verbs. The reason for this is that verbs are morphologically complex and thus it is difficult to isolate the metrical and tonal categories of interest. In this paper, therefore, I introduce the analysis with nouns.

3.1 Suprasegmentals

Nouns can be distinguished by their pitch shape. By “pitch shape” I mean pattern of relative pitch variation. The identification of “surface pitches” in this paper makes no commitment.

---

8 According to Zwicky and Pullum (1983: 505) morphophonological idiosyncracies are a criterion against cliticood in host-clitic combinations and an argument for an affixal treatment. Local morphophonological idiosyncracies are almost non-existent in Chácobo, with one except between a postverbal subject pronoun and the incompletive marker –ki INCL (-ki INCL + ia 1SG.ACC -> -kía) (Iggesen 2006).

9 See Haspelmath (2011) for a critical review of wordhood criteria in the literature. Haspelmath (2011) argues that there is no clear and non-problematic boundary between words, clitics and affixes and that authors apply criteria selectively to the needs of their particular analyses.
concerning the underlying and contrastive tones of the language. In particular, I will argue that M tones are not contrastive. L tones are marginally contrastive, but this can only be shown when we move onto the verb complex in §4.

(17) HL surface tones
    a. míj pó 'dust'
    b. tsístí 'charcoal'
    c. tʃíʃkà 'little, cuckoo'
    d. ʔískò 'green-winged saltador'

(18) LH surface tones
    a. nàtí 'flu'
    b. nòtí 'canoe'
    c. ʃínó 'monkey'
    d. bàkì 'child'

(19) HML
    a. típókò 'goiter'
    b. mápàrì 'bread'
    c. bá kóšó 'foam'
    d. wíʃiímà 'star'

(20) MHL
    a. šó kóbò 'children'
    b. ká napà 'lightning'
    c. ká mãnò 'jaguar'
    d. βá kíʃì 'darkness'

(21) MLH
    a. māʃi'nì 'sand'
    b. pāʔòkì 'ear'
    c. ɾspàrá 'temple of head'
    d. šiótí 'wind'

I have found no evidence for a contrastive M tone. The reader should keep in mind that a vowel with a V̄ on it represents a mid pitch which occurs on metrically strong syllable (cf. n12).

Following Prost (1960: 8) I have found some evidence for an underlying L tone, however it is fairly marginal (cf. Tallman 2014 for a more detailed discussion and analysis of nouns). The most important generalization is that an H tone (or high pitch) is obligatory within the word domain for nouns. In the following I provide a metrical analysis of the suprasegmental phenomena given above.

3.2 Interaction of metrical stress and tone

This section does not give a complete description of the metrical rules of Chácobo (Tallman in prep.), but rather describes the general properties of the system necessary for basic background.

---

10 In prevocalic contexts the first vowel is not lengthened. Sometimes a glottal stop is inserted between the two first syllables in cases such as these (stìʔòtí 'wind'). This phenomenon is completely obligatory in the Pacahuara co-dialect of Chácobo (Ortiz & Tallman 2012). This topic requires instrumental phonetic investigation.

11 This is in contrast to a comment made in passing by Shell (1985: 52: n37) concerning the possibility of contrastive M tones existing in the language.
I assume that surface pitch variation encodes prominence. H tones and M pitches are markers of metrically strong syllables and L tones correspond to weak syllables. The analysis conforms to the typological generalizations found in de Lacy (1999, 2002). De Lacy (2002) formalizes the cross-linguistic relationship between metrical strength and tone with the tonal prominence hierarchy.

(22) *Tonal prominence scale*

\[
H > M > L
\]  
(de Lacy 2002: 2)

I assume that the position of the H pitch reflects underlying H tone in Chácobo and that all other surface tones are predictable from the position of this underlying tone. I argue that Chácobo has the following metrical inventory and tone mapping rules (cf. Tallman *in prep* a for more details with a slightly different analysis).

(23) Trochaic and iambic feet (σσ, σσ'), and a H-Tone monosyllabic foot (σ) (cf. Tallman 2014, Gonzalez 2014)

(24) *Stress-to-H Tone rule:*

A metrically strong syllable is mapped to an underlying H tone.

(25) *Pitch-to-Stress rules:*

a. Map M pitches onto all remaining (those that do not have an H tone) strong syllables in a word (or prosodic domain)

b. Map L pitches/tones onto all remaining syllables.

If one considers the form below, and we assume bisyllabic trochees and monosyllabic feet with one H-Tone syllable (in conformity with Hayes 1995: 71), surface tones and pitches are mapped in the following manner (where s=head, and w=non-head of a foot).

(26) 

\[
\begin{array}{ccc}
  & H & \\
  s & & \\
 a. & (ma.) & (tsa.ka) \\
   & & 'mud' \text{(rule 24)} \\
\end{array}
\]

\[
\begin{array}{ccc}
  & H & \\
  s & s & w \\
 b. & (ma.) & (tsa.ka) \text{(rule 23 parses a trochaic foot and degenerate foot on left edge)} \\
\end{array}
\]

12 Research is underway to determine to what extent pitch is the *only* marker of prominence. Since the current study is based on impressionistic data, it is highly likely that other correlates (such as duration and intensity) play a part in marking metrical prominence.
In the following section I give a description of Chácobo verbal prosody.

4 Chácobo verbal prosody

This section gives a description of prosody in Chácobo. §4.1 describes the different types of verbal morphemes based on their prosodic behavior. §4.2 discusses the behavior of stems. §4.3 gives an overview of culminativity, obligatoriness and metrical lapses in the verb complex.

4.1 Prosodic classification of morphemes

Verbal morphemes divide into at least three different types. These are defined in (28).  

(27)  
a. **H-tone morphemes**: Require an H tone on the same syllable no matter what the prosodic or phonological context (e.g. –yáma- NEG, -tápi- FAST).

  b. **Toneless morphemes**: Have multiple (more than one) prosodic allomorphs. Prosodic shapes are malleable, partly conditioned by metrical context ( -tiki- AGAIN, -kara- DUB).

  c. **L-tone morphemes**: Cannot occur with an H tone. They have prosodic allomorphs that contain only L and M surface pitches (-tsa- NOW.TR, -tsi- NOW.INTR, wa- TR).

The clitic -yáma NEG is an example of an H-tone morpheme. It always has an HL surface shape no matter what its position is.

(29) H-TONE MORPHEME: -yáma NEG (obligatorily requires HL pattern: H-Tone morpheme)

  a. hābā-tiki-yáma-kì  
     run-AGAIN-NEG-CMPL.

  b. hābā-yáma-tiki-kì  
     run-NEG-AGAIN-CMPL.
     ‘He doesn't run again.’

H tones never surface on L-Tone morphemes. -tsi- NOW.INTR is an example of an L-tone morpheme. As we will see, the default position for H tone is the penultimate syllable of the verb complex. However, no H-tone falls on -tsi- NOW.INTR despite the fact that it occurs in penultimate position.

---

13 The names of the morpheme types are meant to signal their underlying prosodic properties (these are discussed in §5). This section simply describes what these properties are without providing an analysis.
The surface pitch shape of toneless morphemes is highly variable. Toneless morphemes can occur with an H tone in certain contexts. Examples of toneless suffixes are -tîki- AGAIN and -kâra- DUB. Notice that in (31a) -tîki- AGAIN occurs with an LH tonal/pitch shape [tîkî] and -kâra- DUB occurs with an ML shape [kârâ], while in (31b) the situation is reversed when the order of the morphemes is reversed.

(31) TONELESS MORPHEMES
a. hâbâ-kârâ-tîki-kî
   run-DUB-AGAIN-CMPL
   ‘He probably ran again.’

b. hâbâ-tîki-kârâ-kî
   run-AGAIN-DUB-CMPL
   ‘He probably ran again.’

4.2 The prosodic behavior of roots versus affixes

The previous section demonstrated that if there is allomorphy in the verb complex it is based completely on tonal/metric variation. Roots are exceptions to this. In previous literature on Chácobo it has been noted that sometimes verb stems insert a vowel. Córdoba et al. (2012) described this as occurring in “bound pronoun” constructions (word-segmentation is from Córdoba et al. 2012).

(32)

a. pi > pii
   pii-ʔ-i-wa-ki
   eat-EP-1SG-v-CMPL
   ‘I ate it.’

b. a > aa
   aa-ʔ-i-wa-ki
   do-EP-1SG-v-CMPL
   ‘I did/ate/drank it.’

As argued in §2, “bound” pronouns constructions are instantiations of split verb constructions with an intervening pronoun rather than a full noun phrase. The segmentation of word boundaries could equally well have been as follows.
Vowel epenthesis on the root occurs when a monosyllabic verb root is stranded away from any verbal morphemes. The examples in (34b) and (34d) have vowel epenthesis while in examples (34a) and (34c) it is prohibited.\(^{14}\) The vowel epenthesis is demonstrated through the position of the variably ordered clitic \(-\text{kas}\) DES.

(34)  

\[
\begin{align*}
a. & \quad \text{kà-kás hónî=ki} \quad (*\text{kaa}) \\
& \quad \text{go-DES man=CMPL} \\
& \quad \text{‘The man wanted to go.’}
\\
b. & \quad \text{ká á hóni kás-kì} \quad (*\text{ka}) \\
& \quad \text{go man DES-CMPL} \\
& \quad \text{‘He wanted to go.’}
\\
c. & \quad \text{pì-kás honî=ki} \quad (*\text{pii}) \\
& \quad \text{eat-DES man.ERG=CMPL} \\
& \quad \text{‘He wanted to eat it.’}
\\
d. & \quad \text{pí hónî kás-kì} \quad (*\text{pi}) \\
& \quad \text{eat man.ERG DES-CMPL} \\
& \quad \text{‘He wanted to eat it.’}
\end{align*}
\]

Vowel epenthesis seems to be driven by constraints on the minimal size of content words. Minimal bisyllabicity of PWd is well-motivated for nouns (Tallman \textit{in press}). Roots constitute a separate prosodic class from other verbal morphemes; they are the only morphemes that undergo vowel epenthesis. Stranded aspect markers for instance do not lengthen their vowels.

### 4.3 Generalizations in the verb complex

#### 4.3.1 Obligatory H tone

Every verb complex has at least one H tone. The domain for this obligatory H tone can be made more specific, however. With one exception to be discussed below, H-tone is obligatory in the last two verbal morphemes of the verb complex (X-ASP where X refers to any verbal morpheme).

(35)  

\[
\begin{align*}
a. & \quad \text{hābā-tīkī-yámā-ki} \\
& \quad \text{run-AGAIN-NEG-INCL} \\
& \quad \text{‘He doesn’t run again.’}
\\
b. & \quad \text{wāfū-bōnā-\acute{w}i} \\
& \quad \text{steer-GO.TR-IMPER2} \\
& \quad \text{‘Steer (the boat), while moving!’}
\end{align*}
\]

\(^{14}\) The issue of whether H-tone epenthesis applies in stranded verbs is an important empirical question that still needs to be tested in the field. At this point I only have a few examples that seem to suggest that such epenthesis occurs.
OBLIGATORY H TONE IN X-ASP WITH TONELESS MORPHEME

(36) hābà-yámà-ɨ̀kɨ́-kì
     run-NEG-AGAIN-INCL
     ‘He is not running again.’

There are two exceptions to this generalization. If the penultimate morpheme is an *L-Tone* morpheme, an obligatory H tone does not occur in this domain. -wa for instance is an L-tone morpheme. No H-tone occurs on this syllable.

(37) tsáyà hòní wā-ɨ̀k
     see man.ERG v-CMPL
     ‘The man him.’

The other exception to H tone obligatoriness in the final two morphemes is when the verb complex is split and an aspect marker is stranded occurring right-adjacent to a subject DP.

(38) ROOT DP =ASP
     hābá [ɨ̀kì=bo]_P =kì
     run dog=PL =CMPL
     ‘The dogs ran.’

4.3.2 Violations of culminativity of H tone

When an H-Tone morpheme occurs outside the two morpheme window described above an apparent violation of culminativity occurs. Examples are given in in (39).

(39) a. hābà-yámà-ɨ̀kɨ́-kì
     run-NEG-AGAIN-INCL
     ‘He does not run again.’

b. hābà-tápi-ɨ̀kɨ́-kì
     run-FAST-AGAIN-INCL
     ‘He runs quickly again.’

4.3.3 Default trochee on right edge

As we have seen one way of analyzing the surface tonal patterns is by assuming right-to-left assigned trochees. This can be seen the most clearly with all toneless morphemes.

(40) a. hābà-ɨ̀kɨ́-bāʔiná-ɨ̀kì
     run-AGAIN-ALLDAY-INCL
b. M L M L M L H L
(ha.βa.)(ti.ki.)(ba.?i.)(na.ki.)
‘He runs again all day.’
When the amount of syllables in the last two morphemes is uneven, then there is a metrical lapse between the final two morphemes and the rest of the verb complex (underlined below). The tone tier and metrical parse is given in (41b).

(41) a. hābā-kārā-tiki-ki
run-DUB-AGAIN-CMPL

b. M L M L L H L
(ha.βa.)(ka-ra-ti)(ki.ki)
‘He probably ran again.’

The next section gives a prosodic analysis of clitics in Chácobo.

5 Prosodic analysis of Chácobo clitics

This section addresses what type of prosodic analysis should be used in order to account for the generalizations given in §4. Here I address the structure of the prosodic words (PWd) and phonological phrases (PPh) and their suprasegmental (metrical and tonal) properties. I argue that the following types of prosodic clitics are present in Chácobo (Selkirk 1996, Anderson 2005).

(42) a. Internal Clitic: PPh

\[
\text{PWd} \quad \text{Host} \quad \text{Clitic}
\]

b. PWd Clitic: PPh

\[
\begin{array}{c}
\text{PWd} \\
\text{Host} \\
\text{PWd} \\
\text{Clitic}
\end{array}
\]

c. Free Clitic: PPh

\[
\begin{array}{c}
\text{PWd} \\
\text{Host} \\
\text{Clitic}
\end{array}
\]

In addition to these prosodic clitics the following analysis also assumes that some verbal morphemes can be differentially prosodized as hosts or clitics. In Selkirk (1996) clitic morphemes are associated with (or equated with) functional morphemes. For Chácobo, however some functional morphemes must also be coded as lexical items in order to account for the
prosodic facts and, in particular, the fact that combinations of functional morphemes construct a PWd. As we will see this assumption allows us to account for the prosody of the stranded aspectual marker.

## 5.1 Underlying tones and prosodic domains

One way of capturing the different prosodic classes of verbal morphemes is by assuming that they have the following underlying specifications. The names of the morphemes introduced in §4 foreshadow the analysis given to these morphemes.

\[(43)\]
\[
\text{a. } \text{H-tone morpheme lexical representation:} \text{ Contains an underlying H tone; e.g. } -{\dot{y}}\text{áma NEG, -tâpi FAST, -wì IMPER2}
\]
\[
\text{b. Toneless morpheme lexical representation:} \text{ Contains } no \text{ underlying tone; e.g. } -{\text{kara DUB, -parì FIRST, -tiki AGAIN, -fari- CRAS}}
\]
\[
\text{c. L-tone morpheme lexical representation:} \text{ Contains an underlying L tone; e.g. } -{\text{tsi NOW.INTR, -wà v}} \text{ (light verb)}
\]

The following properties define PWd and PPh. Notice that, in the current analysis, culminative and obligatory H-tone is a property of the right-most PWd in PPh. Obligatory H-tone is actually a property of PPh rather than PWd.\(^{15}\)

\[(44)\]
\[
\text{a. Domain of Minimal bisyllabic, domain of right-to-left default trochees} \\
\text{PWd: }\text{Constructed over the STEM and/or the right edge of the verb complex; X-ASP.}
\]
\[
\text{b. Domain of H-tone in right-most PWd} \\
\text{PPh: }\text{The left edge is the ROOT, the right-edge is the entire sentence.}
\]

The following rules apply to impose the conditions of the domains when they are not satisfied by the underlying representations of the morphemes that are contained within them. Thus when \(\text{PWd}_{\text{PPh}}\) or the right-most PWd in PPh does not contain an H tone, H-Tone Epenthesis applies in (45). When a PWd is not bisyllabic, vowel epenthesis applies as in (46).

\[(45)\] \text{H-Tone Epenthesis (HTE): Insert an H tone onto the right-most metrically strong syllable in } \text{PWd}_{\text{PPh}}, \text{ if there are no H tones in this domain underlyingly.}

\[(46)\] \text{Vowel-Epenthesis (VE): Insert vowel } (C)V_1 > (C)V_1V_1 . \text{ Apply to PWd if not bisyllabic.}

The following sections give more details on the prosodization of clitics in Chácobo.

---

\(^{15}\) In Selkirk’s (1986) analysis of Chi Mwi:ni stress is assigned at the PPh level. Likewise the analysis here assumes that in Chácobo H tone obligatoriness is really a property about PPh.
5.2 Stranding the stem: Internal clitics

Previous research on Chácobo nouns found much evidence for a minimal bisyllabicity constraint (Tallman in pressa). Assuming roots must be inside PWds can account for segmentally based allomorphy in roots (the alternation between monosyllabic and bisyllabic forms in some roots (e.g. *ka~kaa ‘go’). Note that in cases where the stem is not stranded the vowel cannot epenthesis. Only when a monosyllabic verb root occurs detached from any other verbal morphology does epenthesis occur as a last resort as in (47c).

(47) SEGMENTALLY BASED ALLOMORPHY IN STEMS
a. hóni *kaa-/ká-ki
   man   go-CMPL
   ‘The man went.’

b. *kaa-/ká-kás hóni=ki
   go-DES man=CMPL
   ‘The man wanted to go.’

c. káà hóni kás-ki
   go man DES-CMPL
   ‘The man wanted to go.’

In (47a-b) the stem *ka- ‘go’ surfaces as monosyllabic. This can plausibly be attributed to the fact that the enclitic material attached to it satisfies minimal bisyllabicity for the PWd. The function word is an internal clitic to the stem host.

(48) INTERNAL CLITICS ATTACHED TO MONOSYLLABIC HOST

The stem cannot take a noun or DP constituent as its clitic and thus vowel-epenthesis applies as a last resort in (47c).

5.3 Right-aligned prosodic words: PWord clitics and clitic hosts

Recall that the final two suffixes of the verb complex defined a domain of obligatory H tone, with a few exceptions (these exceptions are taken up in §5.3). If one assumes that a prosodic word is built up from the last two morphemes in the verb complex, this property is accounted for. H-Tone will fall on the penultimate syllable because parsing in PWd is from left to right and the right-most PWd in PPh requires an H tone. This is discussed in §5.3.1.
Recall that metrical lapses can occur after the last two morphemes in the verb complex. The current analysis accounts for the precise conditions under which the metrical lapse occurs. Metrical lapses only occur when the final two enclitics have a syllable count of three. This is also accounted for by assuming a right-aligned PWd clitic. This is discussed in §5.3.2.

In larger words the final two enclitics create a *PWord clitic*. One has to assume that one clitic can serve as the host to another clitic to its left.

\[ (49) \quad \text{*PWord clitic in Chácobo} \]

\[
\begin{array}{c}
\text{PPh} \\
\text{PWd} \\
\text{Host} \\
\text{ROOT} \\
\end{array}
\begin{array}{c}
\text{PWd} \\
\text{Host} \\
\text{MORPH} \\
\text{ASP} \\
\end{array}
\]

5.3.1 **H-tone Epenthesis in PWd]**

If the right-most PWd does not contain an underlying H tone, it is inserted through H-Tone Epenthesis.

\[ (50) \quad \text{H-TONE EPENTHESIS ON PENULTIMATE SYLLABLE} \]

\[
ts\text{áy}-t\text{íki-kár-ki} \\
\text{see-AGAIN-DUB-CMPL} \\
\text{‘He probably saw him again.’} \\
\]

\[
\begin{array}{c}
\text{PPh} \\
\text{PWd}_1 \\
\varphi \\
\text{tsa} \\
\sigma \\
\text{ya} \\
\sigma \\
\text{ti} \\
\sigma \\
\text{ki} \\
\sigma \\
\text{ka} \\
\sigma \\
\text{ra} \\
\sigma \\
\text{ki} \\
\varphi \\
\end{array}
\]

<table>
<thead>
<tr>
<th>UR:</th>
<th>H</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-TE:</td>
<td>( )</td>
</tr>
<tr>
<td>TM:</td>
<td>(H L)</td>
</tr>
</tbody>
</table>

In (50) H-tone epenthesis applies to PWd\(_2\) in order to satisfy a condition of PPh that its right-most PWd must contain an H tone.
5.3.2 Metrical lapses in PPh

We saw that when there was an uneven amount of syllables in the final two morphemes there was an LL metrical lapse. If PWd is constructed on the right edge of the PPh with these final two morphemes we can account for the conditions under which there is an LL metrical lapse in the verb complex. First consider the case where there is no metrical lapse - where there is an even number of syllables in the right-most PWd. This is given in (51).

(52) in contrast has an uneven number of syllables in its right-most PWd. The LL metrical lapse is the result of restarting the parsing of default right-to-left trochees after the right-most PWd.16

(51) EVEN NUMBER OF SYLLABLES IN PWd_{\text{PPh}} = \text{NO METRICAL LAPSE}

hābā-tiḳi-bāʔiná-ki
run-AGAIN-ALLDAY-INCL
‘He is running all day again.’

---

16 An alternative analysis that was proposed at the Berkeley Linguistics Society conference was to stipulate that obligatory H-tone epenthesis occurs in a three syllable window right-aligned to the verb complex. This is discussed in §5.5.
5.4 Exceptions to H-tone epenthesis in PWd: Low tones and Free clitics

5.4.1 H-TE does not apply when H tone is already in PWd]\PPh\n
H-TE only occurs in order to satisfy the requirement that the right-most PWd have an H tone. If an H tone is present in PWd]\PPh\ underlyingly, culminative and obligatory H tone is already satisfied within the PWd]\PPh\.

(53) H-TONE MORPHEMES IN PWd]\PPh\n
a. PPh[ hābà -tìkì PWd[ -yámdì-kì ]PWd ]PPh
  run -AGAIN -NEG -INCL
  ‘He doesn't run again.’

b. PPh[ wāʃà PWd[ -bònà -wi ]PWd ]PPh
  steer -GO/TR -IMPER2
  'Steer (the boat), while moving!'
5.4.2  **H-TE does not apply when penultimate morpheme is an L-tone in PWd|PPh**

-tsá NOW is an L-tone morpheme. When it occurs in penultimate position H-TE is blocked in PWd|PPh. One way of accounting for this is by assuming, as is done in §5.1, that morphemes that block H-Tone epenthesis do so because they are already specified underlyingly as a having an L tone in the position where the HTE would apply (the penultimate syllable). On this analysis L-tone morphemes surface with an M pitch when they are in a metrically strong position. This could be the phonetic output of a metrically strong low tone. This phonology-phonetic interfacing rule is given in (55).

(54)  L-TONE MORPHEME IN PWd |PPh = L TONE ON H-TONE SYLLABLE

\[tsáyá-yámá-tsá-ki\]

see-NEG-NOW-CMPL

‘He did not see him at that moment.’

In other words the presence of an underlying L tone (underlined in the example above) blocks the insertion of an H-tone. H-tone epenthesis does not apply to metrically weak syllables (ma or ki in the example above) (see §3). A morpheme that is marked with an L-tone underlyingly surfaces with an M tone.\(^{17}\)

5.4.3  **H-TE does not apply when no right-aligned PWd is constructed**

Based on the analysis presented thus far there are two circumstances in which a PWd is constructed. One is over a stem, the other is based on the final two enclitics of the verb complex.
There is no H-TE when no PWd can be constructed on the right edge of the verb complex. Only the final aspectual marker is actually obligatory (cf. Figure 1). If this monosyllabic enclitic is stranded apart from any other verbal material, it simply attaches to any element to its left with no effect on tonal or metrical patterns. It is prosodized as a free clitic rather than undergoing vowel-epenthesis so that it can be inside a PWd.

(56) NO PWd ]_{PPh} CONSTRUCTED, LACK OF PHONOLOGICAL MATERIAL

\[ \text{kaa honi=ki} \]
\[ \text{go man=CMPL} \]
\[ \text{‘The man left.’} \]

The behavior of the ASP marker contrasts with that of the stem which adds a vowel to meet requirements for prosodic word. The root must be under a PWd and vowel epenthesis saves a monosyllabic root when it is stranded in the split construction. This is not true of the final aspect marker which prosodizes as a free clitic.

(57) A Stress Window for H tone?

An alternative analysis to the construction of a right edge PWd with functional morphemes would be to assume that H-tone is mapped onto a stress that occurs in a three syllable window of the right edge of the verb complex. A two or three syllable stress window is well-attested typologically (cf. Kager 2012).
The first problem with such an analysis is that by itself it would fail to account for the metrical lapse described in §4.3.3. However, an alternative way of accounting for the metrical lapse is by assuming that default trochees are parsed from left to right outside of a three syllable window within PWd. Consider the following example which contains only toneless morphemes.

(58) a. \[ \text{haba-kara-tiki-ki} \]_{PWd} 
    run-DUB-AGAIN-CMPL  
    \[ s \ w \]  

b. \[ \text{haba-kara-ti(ki-ki)} \]_{PWd} (3 syllable window for trochaic foot on right edge)  
    \[ \rightarrow s \ w \ s \ w \ s \ w \]  

c. \[ \text{(haba)-(kara)-ti(ki-ki)} \]_{PWd} (left-to-right parsing in the rest of the verb complex)  
    \[ s \ w \ s \ w \ s \ w \]  

d. \[ \text{(hābā)-(kārā)-ti(ki-ki)} \]_{PWd} (tone/pitch mapping rules)  
    \[ s \ w \ s \ w \ s \ w \]  

The parsing algorithm sketched above that contains parsing from left-to-right demonstrates that a right edge PWd is not necessary for capturing either the fact that the metrical lapse occurs, or the fact that final H tone is obligatory in the last two syllables. The entire verb complex is composed of one PWd which requires an H tone. *Prima facie* this analysis seems simpler than the one proposed above because the obligatory and culminative character of H tone is defined in PWd rather than the right-most PWd in PPh. Furthermore, this analysis is more in line with the analysis of prosodic clitics presented in Selkirk (1996) since it will not entail that function words can serve as hosts.

The stress-window analysis has some problems, however. First one needs to construct a right edge PWd in the split construction anyway. H-tone epenthesis applies in the stranded clitic material as in the following example. The marker clitic -tiki- AGAIN is a toneless morpheme. In (59) it surfaces with an H tone, the penultimate syllable of the verbal pieces on the right side of the split verb construction.

(59) \text{hābā} \ hōnī \ tiki-ki  
    run \ man \ AGAIN-CMPL  
    ‘The man ran again.’  

In order to continue maintaining the stress window analysis given in (58) one would have to assume that the PWd is discontinuous, an impossibility in all theories of prosodic phonology that I am aware of.

The other problem with the stress window analysis is that it would run counter to typological work in word prosody (Hyman 2006, 2009) that culminativity and obligatoriness are properties
of stress systems. If the PWd spans over the entire verb complex and we assume that H tone is a marker of stress then culminativity is not a property of PWd contra Hyman (2006, 2009).

6 Discussion and Conclusion

This paper’s main focus has been to give a description of the prosodic structure of the verb in Chácobo. The study demonstrates that different prosodic classes of morphemes need to be acknowledged to account for the prosodic behavior of verbal morphemes, including underlying L-tones, not present in other Panoan languages. In addition to this, I provided an analysis of the prosodization of clitics in the language based on the typology of prosodic clitics given in Selkirk (1996) and Anderson (2005). Instead of the PWd being constructed over the verb complex, it is constructed over various subdomains of it post-lexically. The split construction requires that some morphological clitics serve as prosodic hosts. The construction of a right edge PWd in PPh accounts is necessary in order to describe PWd construction in the split construction where aspectual and other material are stranded from the stem. But the construction of the right edge PWd also accounts for the distribution of H tones in the verb complex and LL metrical lapses.

In the analysis presented here, I have relaxed the requirement that clitics are prosodically deficient in a sense, since some functional elements need to serve as the host of the aspectual marker in the split construction. The difference between lexical items and prosodic word clitics is that in the latter case prosodic word construction is post-lexical (cf. discussion in Anderson 2005). Some readers may be alarmed at this move since it implies that learners of the language will have a more difficult time inferring lexical/functional status from prosodic structure. Perhaps it is not surprising however, and reflects the fact that the language is in a nascent state of synthesization. I also point out that many morphemes in fact do have an ambiguous status as lexical or functional elements. For instance *kas- DES* can serve as a desiderative marker modifying a main verb, or be inflected and modified as a main verb itself meaning ‘want’.

To a certain extent the current study has been limited by the nascent state of knowledge in both the syntax and prosody of Chácobo. A more detailed study of prosody in Chácobo would contextualize the construction of prosodic domains with respect to all other prosodic phenomena of the language (truncation (Córdoba et al. 2012), tone sandhi (Iggesen 2006, 2007), suprasegmental case marking (Valenzuela & Iggesen 2007)). In order to really assess the importance of Chácobo for studies in syntax-phonology interfacing one would also need to give a more formalized analysis of syntax and morphology than has been given here (Elordieta 2008 for a review of approaches to the syntax-phonology interface). Another problem with the current study is that the suprasegmental data are based almost entirely on impressionistic transcriptions. Instrumental phonetic investigation might reveal important details in the tonal and metrical system here that were missed by the author.
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Only and focus in Imbabura Quichua

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1 Introduction

This paper investigates the interaction of focus and the exclusive particle -lla ‘only’ in Imbabura Quichua. Imbabura Quichua (henceforth Quichua)1 is a Quechuan language spoken in Imbabura Province in Northern Ecuador. Quichua is a highly agglutinative, suffixing language with a predominantly verb-final word order. A 2008 estimate of the number of speakers is 150,000 (Gómez-Rendón 2008:182fn.). Existing literature on this language includes one descriptive grammar (Cole 1982), whereas most theoretical work on this language is directed towards (morpho)syntax (Cole and Hermon 1981; Hermon 2001; Willgoths and Farrell 2009), and its evidential system (to be discussed in section 2.2 below) (see Sánchez 2010:236ff. for a more exhaustive bibliography on the Quechuan languages).

The study of focus in Quichua is worthwhile for a number of reasons. First, as I will discuss in a little more detail in section 2.1 below, Quichua is a relatively uncommon language from a point of view of focus typology, because it realizes focus non-phonologically, and it has a bound morpheme exclusive particle -lla. The semantic study of focus is still dominated by English and other languages that realize focus by phonological means. Studying a typologically marked language will be insightful in testing our theory for cross-linguistic validity.

Second, this work contributes to an existing body of research on the suffix -mi which appears in several Quechuan languages, and which belongs to perhaps the best studied parts of the Quechuan language family. The suffix is generally assumed to be an evidential marker that doubles as a focus marker, although to my knowledge there have been no previous studies of its use as a focus marker in relation with particles such as ‘only’ or ‘also’. In section 3, I will show that the suffix -mi does not in general mark the argument of -lla, showing that Quichua displays non-uniform focus marking. This leads to questions about focus marking strategies in Quichua, as well as more theoretical questions about how different conceptions of focus are related: the introduction of alternatives and the marking of new information seem to be formally distinguished in Quichua, while theoretical proposals based on English

1 I will use the name (Imbabura) Quichua to refer to the language under investigation, and the more common name Quechua to refer to the Quechuan language family in general. The reason for this is that the Northern Quechuan languages have lost the [e] and [o] morphemes from Proto-Quechua, which the (more widely studied) Southern Quechuan languages have retained (Peter Landerman, p.c.; cf. Gómez-Rendón 2008:169fn.). Quichua (Kichwa, [kitʃwa]) is also one of the names Imbabura Quichua speakers use for their language.
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have attempted to reduce these two to a common basis. In addition, the conceptual link between focus and evidentiality that the dual role of -mi has been taken to illustrate, may now have to be reconsidered.

Most of the conclusions I reach for -lla also hold for the additive particle -pash ‘also/too’. For reasons of space and simplicity I will restrict my attention to -lla. An additional reason to study -lla (as opposed to -pash) is that it aids the understanding and exploration of intensifiers (also known as emphatic reflexives, e.g. ‘The queen herself’): these are expressed in Quichua by the suffix combination -lla-taj. Intensifiers form another category of expressions that are traditionally thought to interact with focus, and a better understanding of the behavior of -lla will shed light on its surprising appearance in this construction (see Tellings 2014b).

The layout of the paper is as follows. Section 2 discusses cross-linguistic variation with respect to focus realization, and for Quichua in particular, and also reviews earlier work on -mi in various Quechuan languages. Section 3 is the main theoretical part of the paper, and studies the interaction of -lla with -mi in detail. I conclude that although -mi has certain focus uses, the exclusive particle does not always co-occur with it. Instead I propose a theory of structural association, in which the morphological connection between -lla and the stem it attaches to plays the role that association-by-focus does in English (section 3.3).

Section 4 explores some unreported facts about the morphosyntax of -lla when it applies to non-nominal arguments. Here we find some surprising paradigms of reduplication, which are reminiscent of verb doubling focus strategies in African languages. Besides these descriptive facts, I show that reduplication, when not used in combination with -lla, can also be used in cases of contrastive focus, which further refines our view of focus marking in Quichua. I will argue that the reduplication strategies are additional instances of structural association, maintaining a uniform analysis of -lla.

One terminological note is in order before we start. Because the interaction of focus with the particle -lla is part of the research question, I will refrain from using the common term ‘focus-sensitive particle’ for it, and instead use the more neutral term ‘alternative-sensitive particle’ (AS-particle), which I borrow from Hartmann and Zimmermann’s (2008) work on focus in an African language that in some respects is similar to Quichua (to be discussed further in section 3.3).

Unless otherwise noted, all reported data come from fieldwork with a native speaker consultant (Barchas-Lichtenstein et al. 2013; Tellings 2014a).

2 The marker -mi

2.1 Focus typology

I take focus to be an information-structural notion, as is standard (e.g. Zimmermann and Onea 2011). Although a predominance of literature on English and related languages has made the term sound synonymous with the phonological cues of its realization in those languages, cross-linguistic work on focus has shown that focus and phonology should be kept separate. Languages differ with respect to how they express focus (called ‘focus realization’). English and many other languages use a variety of phonological means for this
Only and focus in Imbabura Quichua

Purpose: different types of pitch accent, phonological phrasing, pitch range expansion (for tone languages; Sun-Ah Jun, p.c.). Other languages have a fixed syntactic position for focus, or use morphological means for marking focus, e.g. by employing a focus affix. This is the case for various African languages (Aboh et al. 2007), and also Quichua falls in this category.

The non-phonological focus realization of Quichua is an important point, which has been established earlier for other Quechuan languages (Muntendam 2012), and was confirmed in our current fieldwork (Barchas-Lichtenstein et al. 2013). It is also in line with the tendency of Quichua to use morphology where English uses prosodic means. For instance, the intonation pattern of questions and declarative sentences is the same (with the exception of echo questions). This was already discussed by Cole (1982), and confirmed by phonetic studies in the current fieldwork (Kim 2013; cf. Sánchez 2010 for Southern Quechua).

Besides focus realization, there is another dimension of cross-linguistic variation with respect to focus: the morphological form AS-particles take. König (1991) distinguishes between adverbial-type AS-particles and clitic-like or bound AS-particles. Adverbial type AS-particles, found in English, many other European languages, but also in Chinese, are free morphemes that typically enjoy a rather free position within the sentence, in particular in languages in which they associate with phonologically marked focus (such as English). The clitic / bound morpheme type is found for instance in Turkish (Göksel and Özsoy 2003), Japanese and Hindi (Otoguro 2003), Finnish and other languages (König 1991:18).

Quichua also falls in the latter category, with -lla ‘only’ being a suffix. Also other AS-particles in Quichua such as -pash ‘also’ (which can also have a scalar use to mean ‘even’) are suffixes. A language that has exclusive particles that are bound morphemes is considered to be relatively rare cross-linguistically. König (1991:20) discusses a syntactic asymmetry by which many languages are of a ‘mixed type’ in having exclusive particles precede their focus as a free morpheme, but additive particles follow their focus as a clitic (Bengali is one such language). Only 4 out of 70 languages in König’s (1991) study have bound exclusive AS-particles in addition to bound additive particles; one of these is Tarma Quechua (Central Peru). Elsewhere this has been claimed to be a property not only of Quechuan languages, but of Andean languages at large (Adelaar 2004:217).

The combination of these two properties, non-phonological focus marking, and bound exclusive AS-particles, make Quichua a typologically marked language when it comes to focus, and therefore makes a good case study to test the cross-linguistic validity of theoretical accounts of focus.

2.2 Existing views on -mi

The -mi suffix has been widely studied in a variety of Quechuan languages, and has generally been assumed to be an evidential/validational marker that doubles as a focus marker (Jake and Chuquín 1979; Nuckolls 1993; Muysken 1995; Faller 2002, 2003; Gómez-Rendón 2006; Olbertz 2008; Sánchez 2010; Kwon 2012). Morphologically, -mi is classified as an ‘independent suffix’, meaning that it can attach to almost all syntactic categories: nouns, verbs, adjectives, numerals/quantifiers, etc. It always appears as the final suffix on a stem.

2Since Quichua is such a highly agglutinative language, there are not many free-standing functional items. The negation word mana ‘not/no’ is one of them, and we found that -mi cannot attach to it. Here Imbabura
Most of the literature listed above has directed its attention exclusively or predominantly to the evidential use of -mi. These works propose that -mi is either an evidential expressing direct evidence, or a validational marker expressing certainty (see Faller 2003 for the evidential-validational distinction, and a hybrid view). Those works that do address the focus marking role of -mi restrict themselves to question-answer congruence (Kwon 2012:§4) or contrastive focus (Jake and Chuquín 1979:179; Kwon 2012:§4.3). I am not aware of any work on the relation between -mi and AS-particles, which is undertaken here.

In addition, some authors, who concentrate on evidentiality, and shun the empirical details of focus marking, note in passing that a conceptual relation between evidentiality and information structure is plausible, although the details of such a connection are not quite clear yet (Faller 2003:2; Speas 2008:949; Kwon 2012:§5.3). Very briefly, the general idea is that expressions with evidential marking tend to convey information that is new to the addressee. Whether explanations of the conceptual link between evidentiality and information structure along these lines have cross-linguistic validity is unclear; for instance it would make rather strong predictions for languages in which evidential marking is obligatory (as we will see, the use of -mi and other evidentials is optional to some degree in Quichua).

In Imbabura Quichua, a clear use of -mi as a focus marker can be found in question-answer pairs. In (1), I give data that confirm earlier findings about this role of -mi (Kwon 2012). A felicitous answer to subject question in (1a) has -mi on the subject Marya, irrespective of the word order (1b–c). The suffix cannot be omitted (1d) or attached to another constituent (1e).

(1) a. A: Pitaj Pidrutaka rikurka?
   A: Pi-taj _Pedru-ta-ka_ riku-rka.
   who-Q Pedro-ACC-TOP see-PST
   ‘Who saw Pedro?’

b. B: Pidrutaka Maryami rikurka.
   B: _Pedru-ta-ka_ Marya-mi riku-rka.
   Pedro-ACC-TOP Maria-mi see-PST
   ‘Maria saw Pedro’

   Maria-mi Pedro-ACC-TOP see-PST

d. # B’’: _Pedru-ta-ka_ Marya riku-rka.
   Pedro-ACC-TOP Maria see-PST

e. # B’’’: _Pedru-ta-mi_ Marya-ka riku-rka.
   Pedro-ACC-mi Maria-TOP see-TOP

This use of -mi seems to be very robust: whereas in many other contexts and constructions, the use of -mi (e.g., as evidential marker) is optional and varies in position, in question-

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Quichua differs from Cuzco Quechua (Faller 2002:12).


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answer pairs it consistently marks the questioned constituent, and is obligatorily present. Having (re-)established that -mi functions as a focus marker in the typical case of question-answer congruence, the question arises whether -mi plays a similar role in another typical case of focus-sensitivity: the relation with AS-particles. After introducing the exclusive AS-particle -lla in section 3.1, I will look in detail at this question in section 3.2.

3 The exclusive particle and -mi

In this section I will introduce the exclusive AS-particle -lla with nominal associates (section 3.1) and discuss the relation between -lla and -mi (section 3.2). In section 3.3, I present my proposal that -lla associates structurally with its argument, and discuss parallels between my proposal and existing work on AS-particles in the African language Bura (Hartmann and Zimmermann 2008, 2012).

3.1 The distribution of the exclusive particle -lla

The suffix -lla is often labelled a ‘limitative suffix’ in previous literature, which ought to reflect a wide set of uses the suffix has been shown to have, including the use as an exclusive particle, as a diminutive, indicating politeness, indicating precision, etc. (cf. Weber 1989:§19.1 for Huallaga Quechua). I will here concentrate on its use as an exclusive AS-particle, which I gloss as EXCL. In section 3.2, I will introduce and existing work on AS-particles in the African language Bura (Hartmann and Zimmermann 2008, 2012).

In the canonical case when -lla takes a simple, unmodified noun in its semantic scope, -lla attaches to that noun. The sentences in (2) illustrate this: there is a direct match between the position of -lla and its semantic scope.

(2) a. Ńukanchika karamilukunataka wawakunamanllami karanchi.

we-TOP sweets-PL-ACC-LOC TOP child-PL-LOC-EXCL-MI give-1PL

‘We only give sweets to CHILDREN’

b. Karamilukunallatami wawakunamanga karanchi.

sweets-PL-EXCL-ACC-MI child-PL-LOC-LOC give-1PL

‘We only give SWEETS to children’

This pattern is found consistently when the scope of -lla consists of a simple noun phrase. In section 4, we will see that when a simplex verb, adjective or adverb is the semantic scope
of -lla, a different morphosyntactic strategy is employed, but the position of -lla nevertheless corresponds to its scope.

The only case I found in which there is a scope mismatch, is that of complex noun phrases. When a noun is modified by an adjective, a relative phrase, a comitative adjunct or similar modifiers, the suffix -lla consistently attaches to the head noun. Such sentences are focally ambiguous: the semantic scope may either be the entire nominal constituent, or be restricted to the modifier. This is illustrated for adjectival modification in (3).

(3) Maryaka puka mansanallatami gushtan.

Marya-ka puka mansana-l-la-ta-mi gushta-n.
Maria-TOP red apple-LIM-ACC-MI like-PRES

‘Maria only likes [RED] apples’ / ‘Maria only likes [RED APPLES]’

Example (4) shows this more explicitly with a contrast. The first clauses of (4a) and (4b) are identical in structure, despite the difference in semantic scope of -lla.


Jwan-ga mana birrdi mansana-kuna-l-la-ta gushta-n-llu, pay-ka puka
Juan-TOP not green apple-PL-EXCL-ACC like-PRES-NEG, he-TOP red
mansana-kuna-ta-pash-mi gushta-n.
apple-PL-ACC-ADD-MI like-PRES

‘Juan does not only like GREEN apples, he also likes RED apples.

b. Jwanga mana puka mansanakunallata gushtanllu, payka puka ubaskunatapashmi gushtan.

Jwan-ga mana puka mansana-kuna-l-la-ta gushta-n-llu, pay-ka puka
Juan-TOP not red apple-PL-EXCL-ACC like-PRES-NEG, he-TOP red
ubas-kuna-ta-pash-mi gushta-n.
grape-PL-ACC-ADD-MI like-PRES

‘Juan does not only like red APPLES, he also likes red GRAPES.

An important observation is that other discourse particles in Quichua, such as -mi and the topic marker -ka, have similar restrictions. It has been observed for other Quechuan languages that -mi always attaches to the head noun (“constituent-external” in Muysken’s (1995:380) terminology), and similarly for -ka (Sánchez 2010:71). Example (5) replicates this finding for -mi in Quichua: even though the questioned information is ‘red’, and ‘apple’ is old information, -mi still attaches to mansana ‘apple’.

(5) a. Q: Ima mansanatataj mikurkangi?

Q: Ima mansana-ta-taj miku-rka-ngi?
what apple-ACC-Q eat-PST-2SG

‘What kind of apples did you eat?’

b. A: Puka mansanatamî mikurkani.

A: Puka mansana-ta-mî miku-rka-ni.
red apple-ACC-MI eat-PST-1SG

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'I ate RED apples'

3.2 The relation between -lla and -mi

The traditional idea is that the semantic role of focus is to introduce alternatives (e.g. Rooth 1992; cf. Zimmermann and Onea 2011). AS-particles such as ‘only’ and ‘also’ directly associate with these alternatives. A natural question, then, is whether the suffix -mi, which

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we saw functions as a focus marker in at least certain cases, is responsible for generating the alternatives that -lla associates with.

A first look at the data with -lla that we collected in our fieldwork corpus (Barchas-Lichtenstein et al. 2013) suggests that this might indeed be the case. Quantitatively, -lla-marked words also bear the -mi suffix in the majority of cases. Of course, numerical majority is meaningless unless the data are somehow controlled for sentence type. Indeed, in this section I will argue that a more careful look at the data leads to the conclusion that -lla-marked words do not necessarily take -mi. I will now present four empirical arguments to support this claim, and subsequently I will look at these data from a more theoretical perspective. I will also offer an alternative explanation for the perceived wide-spread co-occurrence of -lla and -mi.

1. It is known from earlier work on -mi that there are certain restrictions on its distribution, findings which I have replicated in my fieldwork. The suffix -mi is not licensed in imperatives (Muysken 1995:382; Faller 2002:266; Sánchez 2010:60ff.), inside the body of a question,4 or inside the scope of negation (Jake and Chuquín 1979:173; Faller 2002:227ff.). In (8) below I present novel data that show that, first, -lla may occur inside these contexts, and second, that when it does it cannot combine with -mi.

(8) a. Yuraj sadakunallata(*mi) agllay. [imperative]
   Yuraj sada-kuna-lla-ta-(*mi) aglla-y.
   white corn-PL-EXCL-ACC-(*MI) select-IMP
   ‘Select only the white corn.’

b. Pitaj arrusllata{ka/*mi} mikurka? [question]
   Pi-taj arrus-lla-ta-{ka/*mi} miku-rka?
   who-Q rice-EXCL-ACC-TOP/*MI eat-PST?
   ‘Who ate only rice?’

c. Mana Maryalla(*mi) puñujunllu. [wide-scope negation]
   Mana Marya-lla-(*mi) puñu-ju-n-llu.
   not Maria-EXCL-(*MI) sleep-PROG-PRES-NEG
   ‘Not only Maria is sleeping’

d. Maryallami mana puñujun. [narrow-scope negation]
   Marya-lla-mi mana puñu-ju-n.
   Maria-EXCL-MI not sleep-PROG-PRES
   ‘Only Maria is not sleeping’

Examples (8cd) form a minimal pair that shows the behavior of -mi with respect to the scope of negation. Since the interpretation of -lla in the sentences in (8) is not different from -lla in environments in which -mi is licensed, and still involves alternatives, this provides a strong argument for my claim that -mi is not responsible for introducing alternatives.

4The wh-word or a pied-piped constituent may bear -mi (cf. Cole 1982:18; cf. Olbertz 2008:115), but -mi never occurs on other constituents in the body of the question.
2. In answers to questions that contain -lla, -mi attaches to the constituent corresponding to the novel information, not to -lla.

(9) Pitaj arrusllataka mikurka?

Pi-taj arrus-lla-ta-ka miku-rka?
who-Q rice-EXCL-ACC-TOP eat-PST?

‘Who ate only rice?’

a. Jwanmi arrusllataka mikurka.
   Jwan-mi arrus-lla-ta-ka miku-rka.
   Juan-MI rice-EXCL-ACC-TOP eat-PST

   ‘JUAN ate only rice.’

b. # Jwanga arrusllatami mikurka.
   Jwan-ga arrus-lla-ta-mi miku-rka.
   John-TOP rice-EXCL-ACC-MI eat-PST

   ‘Juan ate only rice’ [fine in other contexts, but inappropriate as an answer to this question]

Reasoning by contradiction, let us assume that we expect -lla-marked words to also be marked with -mi. Then these data are at some level similar to cases of second-occurrence focus in English, in which two focus-sensitive operators occur in one sentence, but only one element in the sentence appears to be phonologically marked for focus:

(10) A: John only kissed MARY.
    B: Yes, even BILL only kissed [Mary]_{sof}.

The traditional view on these examples is that ‘Bill’ is phonologically focus-marked (by virtue of being an argument of the particle ‘even’), but ‘Mary’ in (10B) is not phonologically marked (indicated by sof ‘second-occurrence focus’), even though it is the argument of the focus-sensitive operator ‘only’. However, recent phonetic work (Beaver et al. 2007) suggests that second-occurrence focus in fact comes with certain phonetic cues that may not be directly noticeable to the informal listener, but listeners are still sensitive to.

The situation in Quichua in (9) is similar in that, by hypothesis, we have two constituents that need to be marked by -mi: the questioned constituent, in this case Juan ‘Juan’, and the -lla-marked constituent. It is well known throughout the Quechua literature on -mi that the suffix may occur only once per clause (e.g. Jake and Chuquín 1979:173, Cole 1982:165, Muysken 1995:381, Sánchez 2010:60). One theory that predicts the position of -mi in the case of multiple (potential) hosts is due to Sánchez (2010). Her proposal is that only the host closest to the Focus head in the left periphery is morphologically marked (p. 62ff.). The data in (9) seem to corroborate this theory as the -mi suffix attaches to the highest (‘leftmost’) element in the sentence. However, the crucial observation is that the -lla-marked constituent here takes the
topic marker -\textit{ka}. It is well known that the -\textit{ka} marker is in complementary distribution with -\textit{mi} in the sense that the two can never co-occur on the same stem (*-X-mi-\textit{ka}, *-X-\textit{ka-mi}). Therefore Sánchez’s theory would predict no further (discourse) markers to attach to the -\textit{lla}-marked constituent, and does not explain the appearance of -\textit{ka}. It is not clear to me how other theories that predict the single spell-out of -\textit{mi} with multiple hosts could explain this pattern either. Therefore, I cancel the earlier hypothesis, and conclude that the -\textit{lla}-marked constituent is not necessarily marked by -\textit{mi}. Instead, these data suggest that when -\textit{lla} in other contexts does appear with -\textit{mi}, -\textit{mi} plays a different role, presumably evidential, and does not introduce alternatives.

3. There are some cases in which a -\textit{lla}-marked constituent is optionally marked by -\textit{mi}. The precise distribution of cases in which -\textit{mi} is optional is not quite clear yet, but this general finding is in line with earlier observations about the optionality of -\textit{mi} (e.g. Olbertz 2008).

   (11) Jwanga \textit{alkullata(mi) misillata(mi) rikurka.}

       Jwan-ga \textit{alku-lla-ta-(mi) misi-lla-ta-(mi) riku-rka.}
       Juan-\textsc{top} \textsc{dog-excl-acc-(mi) cat-excl-acc-(mi) see-pst}

       ‘Juan saw only the dog and the cat’ [either -\textit{mi} on both conjuncts or on neither]

   (12) Chay musuka kandami \textit{wakachiyllata(mi) wakachinga}.\textsuperscript{5}

       Chay musu-\textsc{ka} kan-da-\textsc{mi} waka-chi-y-\textit{lla-ta-(mi) waka-chi-
       cry-caus-nzr-lim-acc-(mi) cry-caus-fut

       ‘That boy will only make you cry’

4. We find that other evidential/validational markers may combine with -\textit{lla}.\textsuperscript{6} the certainty marker -\textit{mari}, the conjectural -\textit{shi} and the doubt marker -\textit{chari} may all combine with -\textit{lla}.

   (13) a. Pidruka aychallatamari mikurka.

       Pidru-\textsc{ka} aycha-lla-ta-mari miku-rka.
       Pedro-\textsc{top} meat-excl-acc-certain eat-pst

       ‘Pedro for sure ate only meat’

   b. Jwanllashi fishtamanga shamurka.

       Jwan-lla-shi fishta-man-\textsc{ga shamu-rka.}
       Juan-excl-conjecture party-loc-top come-pst

       ‘I suppose only Juan came to the party’

   c. Pidruka aychallatachari mikurka.

\textsuperscript{5}This example involves verbal reduplication as a strategy of -\textit{lla}-marking. This will be discussed further in section 4.2.

\textsuperscript{6}I am indebted to Sarah Murray (p.c.) for the suggestion to elicit such data.
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Pidru-ka  aycha-lla-ta-chari  miku-rka.
Pedro-TOP meat-EXCL-ACC-DOUBT eat-PST

‘Pedro ate only meat (I wonder)’

The markers -mari, -chari and -shi are evidentials with a more specific meaning, that are not taken to double as focus markers. This suggests again that when -lla occurs with -mi, it is because of the evidential role of -mi, and not its (alleged) focus marker use.

Taking stock, by looking at more carefully controlled data, we saw that constituents with the -lla suffix do not necessarily also bear the -mi suffix. Because in these contexts in which the -lla-marked constituent is not marked by -mi, the -lla suffix is still interpreted as an exclusive AS-particle meaning ‘only X’, the alternatives needed for its interpretation cannot be provided by -mi but must come from a different source. Although one could in principle argue that in occurrences of -lla-mi, the -mi suffix does introduce alternatives for the interpretation of -lla, this posits two different grammatical strategies for the introduction of alternatives, which by Ockham’s razor is unappealing. Furthermore, we have seen good reasons to believe that in occurrences of -lla-mi, the -mi plays the role of a (purely) evidential marker, e.g. as in (13) above.

Having established that -mi does not introduce the alternatives the AS-particle applies to, I consequently believe that the perceived abundance of -lla-mi mentioned earlier is not the result of a grammatical dependency between the two morphemes, but can be explained in different terms. It seems plausible that in many neutral contexts ‘only X’ corresponds to new information in the sentence, and I propose that this is why in neutral contexts we see -lla and -mi so often together on the same constituent. In constructed contexts in which ‘only X’ is instead part of the backgrounderd information, as in (9), we see no presence of -mi on the -lla-marked constituent, as expected. Furthermore, the presence of -mi is very common in our fieldwork corpus at large (not just the -lla-data): in most simple, neutral contexts, the suffix -mi appears somewhere in the sentence (for examples in this paper, see for instance simple sentences as in (20) and (21a) below). The many occurrences of -lla-mi can be considered as a consequence of the overall tendency.

3.3 Structural association

I will now discuss the consequences of the lack of a grammatical relation between -lla and -mi for the theory of AS-particles. A common view takes ‘only’ to be a quantifying expression (see e.g. Herburger 2000, much of the following discussion is also based on Beaver et al.’s 2007 introduction), thus having two arguments corresponding to the semantic scope of ‘only’ and the VP-predicate (I set aside here the adjectival use of ‘only’).

(14) Only [Linda]_f [invited Bill to the party].
    semantic scope predicate

The F-marking denotes a formal syntactic representation of focus, unrelated to how focus is realized (in English, the word would be pitch accented). Beaver et al. (2007) argue that ‘only’ is focus-sensitive because it selects one of its arguments (its semantic scope) by F-marking
it, in English reflected by phonological marking. Argument selection by F-marking is taken to be an alternative strategy besides more common strategies of argument selection, such as morphology (e.g. case marking) and syntactic configuration (word order). Note that in this respect Beaver et al.’s approach is English-centered: they take F-marking to be closely related to phonological marking (p. 252). As a strategy of argument selection, F-marking is only distinct in its surface realization from morphological and configurational strategies in languages with phonological focus realization. In languages that have morphological or syntactic focus realization, F-marking would reduce to one of the two other strategies. Beaver et al. (2007:249), concentrating on English, state that the puzzle of focus sensitivity lies mainly in the link between phonology and the semantics/syntax of argument selection of focus-sensitive operators, while I would claim that in Quichua, the main puzzle about focus sensitivity lies in the link between the generation of alternatives and the syntax/semantics of the alternative-sensitive particle.

The discussion in section 3.1 made clear that, other than in English, Quichua does have a morphological structure available to link -lla with its argument, since in most cases there is a direct match between the position of -lla and its semantic argument. The only exception was formed by complex noun phrases, where -lla always attaches to the head noun.

We have also seen that there is clear empirical evidence to dismiss the idea that -lla-marked constituents are always marked with -mi, rendering untenable the idea that this may be an explanation for how -lla selects its argument. This in turn led to the conclusion that -mi does not play the role of introducing alternatives.

I therefore propose that the exclusive AS-particle -lla in Quichua does not associate with its argument by focus via marking of -mi, but rather associates with its semantic scope structurally via the process of suffixation. A similar idea has been proposed for AS-particles in the African language Bura (Chadic) in work by Hartmann and Zimmermann (2008, 2012). A common property of many African languages is that they have two different strategies for focus-marking: the focus constituent may be fronted (ex-situ marking) or may stay in its base position (in-situ marking) (see Aboh et al. 2007 for an overview).

It has been reported for certain languages that in-situ focus marking is not marked phonologically (Hartmann and Zimmermann 2007, 2008 for Hausa and Bura, respectively). Furthermore, Bura has a focus marker an that only occurs with ex-situ focus, meaning that in-situ focus is completely unmarked (morphologically, phonologically and syntactically), suggesting that the interpretation of the information-structural content of focus must be determined purely pragmatically (Hartmann and Zimmermann 2012:1076fn. for Bura, and 2007:243 for Hausa).

The exclusive particle daci ‘only’ in Bura may either occur directly adjacent to its scope, or at a distance. Crucially, when daci is non-adjacent, its scope must be marked by the focus marker an, as the following example from Hartmann and Zimmermann (2008:201) illustrates:

(15) a. Mtaku liha Biu daci. [Bura]
   Mtaku liha Biu daci.
   Mtaku go Biu only
   ‘Mtaku went only to BIU’;
   ≠ ‘Only MTAKU went to Biu’
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b. Mtaku an liha Biu daci.  
Mtaku an liha Biu daci.
Mtaku FM go Biu only.
‘Only MTAKU went to Biu’

Hartmann and Zimmermann (2008:202) argue that argument selection of daci in Bura either occurs by morphological focus marking with an (possibly at a distance), or structurally by daci being adjacent to its associate.

I propose that Quichua -lla has a structural association strategy similar to Bura daci with in-situ focus. I have reviewed empirical and conceptual arguments for this type of account. The finding of focal underdetermination in complex DPs does not constitute a problem for my account. We saw that the attachment of -lla to maximal projections parallels the behavior of -mi and -ka, suggesting that it may be related to an independent syntactic property of Quichua. The focal ambiguity that is a result of this (exemplified in (3)) can be explained by filling in details about how alternatives are generated: when -lla attaches to a maximal DP projection, alternatives are generated for all subconstituents of the nominal phrase. This has been suggested for other languages such as Turkish (cf. Göksel and Özsoy 2003), and is not substantially different from theories of focus projection in English alluded to in section 3.1 above.

This concludes the first part of the paper. I now turn to cases in which the scope of -lla is a non-nominal constituent. Here, Quichua employs different morphosyntactic strategies, namely reduplication. Besides the purely empirical interest of this construction, I will show how other, non-AS readings of -lla come into the picture. I will also relate the data to verb doubling focus strategies in African languages, and furthermore show that these reduplicative strategies have an additional contrastive focus use, leading us to rethink our idea of ‘non-uniform focus marking’. As far as I am aware, none of these facts have been reported before in the Quechua literature. The novel observations will still be in line with my proposal: I will argue that these are different types of structural association of -lla.

4 Non-nominal associates

4.1 Adjectives and adverbs

In example (3) we saw that -lla attaches to the head noun of an adjectivally modified noun phrase, even if the semantic scope of -lla is confined to just the adjective. It turns out that it is also grammatical to attach -lla directly to the adjective, as in (16), but this gives a different, non-AS reading.

(16) Maryaka pukalla mansanatami gushtan.

Marya-ka puka-llla mansana-ta-mi gushta-n.
Maria-TOP red-LIM apple-ACC-MI like-PRES

‘Maria likes reddish/somewhat red apples’
≠ ‘Maria only likes RED apples’
The effect -lla has when attached to an adjective is that it expresses that the modified noun instantiates the quality expressed by the adjective to a lesser degree. In (16) this is translated by ‘reddish’ or ‘somewhat red’. This use of -lla is productive for other gradable adjectives in Quichua (e.g. kushi ‘happy’; kushi-lla ‘somewhat happy’).

This meaning of -lla corresponds better to its categorization as a ‘limitative suffix’ mentioned in section 3.1. Therefore in (16), I glossed -lla as a limitative marker (LIM), as opposed to an exclusive marker (EXCL) in all previous examples. Although presumably related, I think it is good to keep the use of -lla as an exclusive AS-particle and other uses of -lla separate: not only does a difference in alternative-sensitivity seem to be too important to reduce to mere polysemy, in particular the morphosyntactic differences reported here suggest a systematic distinction.

The crucial question at this point is how Quichua expresses a bare adjective (or AP) as an argument of -lla when used as an exclusive AS-particle. In this case we find adjectival reduplication, as illustrated in (17) and (18). In (17) the semantic scope of -lla is the adjective llaki ‘sad’. This adjective is reduplicated, and -lla attaches to the first copy.

(17) Maryaka llakillami llaki, mana ungushkachu.

Marya-ka  llaki-lla-mi  llaki, mana ungushka-chu.
Maria-TOP sad-EXCL-MI sad, not ill-NEG

‘Maria is only sad, not ill’

Example (18) shows this once more, and in addition shows that the same paradigm is observed for the additive AS-particle -pash.

(18) Kay bandiraka pukami killupash killumi. Chay bandiraka pukallami puka.

Kay bandira-ka puka-mi killu-pash killu-mi. Chay bandira-ka puka-lla-mi
this flag-TOP red-MI yellow-ADD yellow-MI that flag-TOP red-EXCL-MI
puka. red

‘This flag is red and yellow. That flag is only red’

Adverbs show the same pattern. Adverbs in Quichua may be derived from adjectives using a -ta suffix (homophonous with the accusative case marker). Example (19a) shows the limitative meaning of -lla, (19b) shows the reduplication strategy, and (19c) illustrates that the adverbializing suffix cannot be reduplicated.

(19) a. Wawaka sinchillatami wakan.
Wawa-ka  sinchi-lla-ta-mi  waka-n.
baby-TOP loud-LIM-ADV-MI cry-PRES

‘The baby cries somewhat loudly’

b. Wawaka sinchillatami sinchi wakan.
Wawa-ka  sinchi-lla-ta-mi  sinchi waka-n.
baby-TOP loud-EXCL-ADV-MI loud cry-PRES

‘The baby cries only loudly’
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\[
\begin{align*}
\text{Wawa-ka} & \quad \text{sinchi-lla-ta-mi} \quad \text{sinchi-ta} \quad \text{waka-n}. \\
\text{baby-TOP} & \quad \text{loud-EXCL-ADV-MI} \quad \text{loud-ADV} \quad \text{cry-PRES}
\end{align*}
\]

Adjectival reduplication is not restricted to the combination with -lla as shown here, but is used productively in Quichua to expresses intensification of the adjective, as illustrated in (20).

(20) Pidruka jatun-jatunmi.

\[
\begin{align*}
\text{Pidru-ka} & \quad \text{jatun–jatun-mi}. \\
\text{Pedro-TOP} & \quad \text{tall–tall-MI}
\end{align*}
\]

‘Pedro is very tall’

An important difference between (17) and (20) is the position of -mi: in (17) it attaches to the first copy, whereas in (20) it attaches to the second copy.\(^7\) It turns out that attaching -mi to the first copy in (17) is also possible, but only in contrastive contexts. It is infelicitous in out of the blue contexts. Example (21) shows such a contrastive context. Crucially, adjectival reduplication here does not mean intensification.


\[
\begin{align*}
\text{A: Pidru-ka} & \quad \text{kutsi-mi puri-n}. \\
\text{Pedro-TOP} & \quad \text{fast-MI} \quad \text{walk-PRES}
\end{align*}
\]

‘Pedro walks fast’

b. B: Mana, Pidruka alimandami (alimanda) purin.

\[
\begin{align*}
\text{B: Mana, Pidru-ka} & \quad \text{alimanda-mi (alimanda) puri-n}. \\
\text{no,} & \quad \text{Pedro-TOP slow-MI} \quad \text{(slow)} \quad \text{walk-PRES}
\end{align*}
\]

‘No, Pedro walks slowly’

\(\neq\) ‘No, Pedro walks very slowly’

It is important to note that adjectival reduplication is not the only way to express contrastive focus. As indicated by the parentheses in (21b), simple attachment of -mi to the adjective is also possible (the consultant suggested that adjectival reduplication is a more emphatic way to express a contrast). This also holds for question-answer pairs in which the adjective corresponds to the questioned constituent.

The examples in (20) and (21) show two different types of adjectival reduplication in Quichua. At the surface they look very similar, and they also share certain syntactic properties. For example neither in reduplication with the meaning of intensification, nor in reduplication in combination with -lla or contrastive focus, may any material (e.g. negation particles, adverbs) intervene between the reduplicated copies. However, the two types of reduplication can be distinguished by the position of suffix attachment. The first type carries the meaning of intensification (as in (20)), and suffixes attach to the second copy (this not only holds for -mi, but also for other suffixes; e.g. ‘very loudly’ is expressed as sinchi

\(^7\)This is apparently different for -pash in (18). I leave such differences between -lla and -pash for future research.

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The second type is used both in combination with exclusive -lla (as in (17)), and for contrastive focus (as in (21)). For this type, suffixes attach to the first reduplicated copy.

The availability of reduplication for contrastive focus (which, again, does not have the meaning of intensification) suggests a morphosyntactic link between contrastive focus and exclusive AS-particles. In section 3 we concluded that Quichua displays non-uniform focus marking in the sense that focus in question-answer pairs and contrastive focus are expressed by the suffix -mi, while the argument of the exclusive AS-particle -lla need not marked by -mi. Here, however, by looking in more detail at adjectives, we have also found a commonality between the two types of focus: both use a special morphosyntactic construction of reduplication.

This brings us back to my proposal of structural association of exclusive -lla. I will assume that the reduplication strategy for exclusive -lla-attachment to adjectives is a different type of structural association, possibly influenced to the polysemy of the suffix in the adjectival domain. Alternatives are generated on attachment of -lla to the reduplicated phrase [ Adj Adj ].

### 4.2 Verbs

A similar situation holds for verbs. When -lla attaches directly to a verb, it has a meaning that is distinct from its normal exclusive particle use. This reading is not directly translatable into English, but judging from the contexts the consultant gave, it may paraphrasable by ‘just’ (in its non-temporal meaning) or ‘easily’. I provide two examples below:

(22) Maryaka brinkarkallami.
Marya-ka brinka-rka-lla-mi.
‘Maria just jumped’ [context: Maria is a little girl, she didn’t ask, she just jumped.]

(23) Maryaka chakata yalirkallami.
Marya-ka chaka-ta yali-rka-lla-mi.
‘Maria just crossed the bridge’ [context: the bridge is known to be a very dangerous bridge, but Maria is not aware of this, and she just crossed it (non-temporal ‘just’).]

Although some analyses of English ‘just’ classify it as a focus-sensitive particle (e.g. König 1991:§5.3), it is not clear that we can count this use of -lla on verbs as alternative-sensitive, given that ‘just’ in (22–23) is only an approximate translation. This requires further research, but for now I assume, based also on the intuitions of the consultant, that there is a clear distinction between the meaning of -lla in (22) and (23) on the one hand, and the cases of verbal reduplication to be discussed below on the other.

Quichua again employs a special construction in order to have a verb in the scope of the exclusive particle: -lla attaches to a nominalized copy of the verb. The verbal copy also carries an accusative case marker, even in the case of intransitive verbs. Whether this construction is to be counted as an instance of reduplication is mostly a terminological
matter; other suitable labels may include verb doubling (Aboh 2006), or a cognate object construction. Example (24) illustrates this construction with an intransitive verb, and example (25) contains a transitive verb, showing that both the nominalized copy of the verb and the direct object get accusative case markers.

(24) Jwanga kantayllatami kantarka, payka mana tushurkachu.
Jwan-ga kanta-y-llea-ta-mi kanta-rka, pay-ka mana tushu-rka-chu.
Juan- TOP sing-NZR-EXCL-ACC-MI sing-PST, he-TOP not dance-PST-NEG

‘Juan only SANG, he didn’t dance’

(25) Rusaka jura aswataka mana maliyllataka malirkachu upyaytami upyarka.
Rusa-ka jura aswa-ta-ka mana mali-y-llea-ta-ka mali-rka-chu,
Rosa-TOP corn beer-ACC-TOP not taste-NZR-EXCL-ACC-TOP taste-PST-NEG,
uppya-y-ta-mi upya-rka.
drink-NZR-ACC-MI drink-PST

‘Rosa didn’t only TASTE the corn beer, she also DRANK it.’

Example (25) in addition shows that verbal reduplication may also occur without the presence of -llla on the verb. Just as for adjectives, there seems to be a focus meaning connected to it. Additional examples are given in (26) and (27).

(26) a. Wambraka tushuytami tushurka.
Wambra-ka tushu-y-ta-mi tushu-rka.
boy/girl-TOP dance-NZR-ACC-MI dance-PST

‘The boy/girl DANCED’ [context: instead of other things that (s)he was expected to do, (s)he danced]

b. Tamya ytami tamyarka.
Tamya-y-ta-mi tamya-rka.
rain-NZR-ACC-MI rain-PST

‘It RAINED’ [context: one expected it to drizzle, but it didn’t. It rained.]

(27) a. Q: Jwanga arrustaka yanurkachu?
Q: Jwan-ga arrus-ta-ka yanu-rka-chu?
Juan-TOP rice-ACC-TOP cook-PST-Q

‘Did Juan cook the rice?’

no, he-TOP rice-TOP cook-PST-NEG eat-NZR-ACC-MI eat-PST

‘No, he didn’t cook the rice. He ATE the rice’

I am indebted to Lauren Winans for suggesting the label ‘cognate object’ for this construction.
One aspect in which the verbal reduplication strategy differs from the adjectival reduplication strategy, is that in the former but not the latter material may intervene. This is illustrated for -lla in (28a), in which an adverb intervenes between the reduplicated verb copies. Other positions of the adverb are possible as well, with the adverb appearing before the verbs being the most neutral option. The sentence in (28a) is equally grammatical but in the opinion of the consultant has slightly more emphasis on ‘yesterday’. Example (28b) shows intervention of a direct object in reduplication with the suffix -pash. This word order was uttered spontaneously by the consultant, but the variant with adjacent verb copies was judged equally grammatical.

(28) a. Jwanga kantayllatami kaynaka kantarka.
    Jwan-ga kanta-y-lla-ta-mi kayna-ka kanta-rka.
    ‘Juan only SANG yesterday’

b. Maryaka kilkaytapash libruta kilkarka.
    Marya-ka kilka-y-ta-pash libr-uta kilka-rka.
    ‘Maria also wrote a book’ [in addition to reading one]

Doubling strategies have been reported as a verbal focus strategy in other languages, in particular African languages (Aboh 2004, 2006 and references in there). In the Kwa language group, one verb focus strategy consists of preposing a “nominalized reduplicated verbal gerund” (Aboh 2004:12), which is superficially quite similar to Quichua. There are, however, important syntactic differences. A common analysis of the verb doubling in the relevant African languages is that it is a regular instance of focus movement, but with both copies pronounced. In Quichua the copied verb does not move consistently to the left periphery, but typically remains close to the original verb, more similar to the position of a regular direct object. A more detailed syntactic analysis of this phenomenon is required, which I leave to future research.

In a similar vein to the case of adjectives, I suggest that verbal reduplication is a different instance of structural association, influenced by polysemy of -lla in the verbal domain. Because both for adjectives and verbs, it was found that the reduplication carries some focus meaning by itself, the findings are not incompatible with an analysis in which the reduplication itself is a focus-marking strategy that generates alternatives, and -lla merely attaches and applies to the available alternatives. An analysis along these lines is not in conflict with my proposal, but my proposal has the advantage of maintaining a uniform analysis of -lla with the conclusions reached for nominal associates as discussed in section 3.

5 Conclusion

The main empirical conclusions are summarized in Table 1. This table is not exhaustive, for example I have not talked about -lla taking scope over an entire VP. I have not included examples on VP-scoping ‘only’, because the data are a little less clear than those summarized in Table 1. Based on the preliminary conclusions I have
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Table 1: Behavior of -lla

<table>
<thead>
<tr>
<th>category of X</th>
<th>meaning of X-lla</th>
<th>way to express ‘only [X]’</th>
</tr>
</thead>
<tbody>
<tr>
<td>noun</td>
<td>only</td>
<td>X-lla</td>
</tr>
<tr>
<td>complex NP</td>
<td>only (i.e. X-lla on head noun)</td>
<td>X₀-lla</td>
</tr>
<tr>
<td>adjective / adverb</td>
<td>weakening meaning ‘just’</td>
<td>X-lla X</td>
</tr>
<tr>
<td>verb</td>
<td></td>
<td>X-y-lla-ta X</td>
</tr>
</tbody>
</table>

gotten so far, it seems that there is some variation with respect to the position of -lla within the VP when its semantic scope is formed by that VP. This is not entirely unexpected, since we see something similar in the parallel case of -mi in question-answer pairs. A question like ‘What happened?’ requires an answer in which the entire VP is new information, and in Quichua it turns out that in a felicitous answer to that question, -mi can attach to different constituents within the VP. This suggests a further parallel between the distributions of -lla and -mi beyond what was discussed in section 3.1.

I proposed an account of structural association for -lla that is independent of the marker -mi. Although -mi is used to mark new information in contexts of question-answer pairs and contrastive focus, I argued that -mi is not responsible for introducing alternatives to AS-particles. This means -mi plays some but not all roles that are typically expected for a ‘focus marker’ reasoning from an English perspective. On the other hand, in our study of adjectives and verbs in section 4 we found that a special reduplicative construction used to associate AS-particles with their scope was also a way to indicate contrastive focus. Hence, at least for adjectives and verbs, the connection between new information focus in question-answer pairs, and AS-particles in Quichua lies not in the marker -mi, but in the shared morphosyntactic constructions of reduplication. It is important to remember, though, that reduplication is the only way to associate AS-particles with their adjectival or verbal scope, but reduplication is only one possible (perhaps more emphatic) way to express contrastive focus with an adjective or a verb. Therefore further research to enhance our understanding of contrastive focus in Quichua is needed in order to appreciate the full theoretical consequences of these findings.

Going back to cases of nominal associates of AS-particles, there is still a non-uniform paradigm of focus marking in Quichua: -mi marks focus in question-answer pairs, but does not mark the argument of AS-particles. This non-uniform focus marking in Quichua may be problematic for theoretical accounts that have attempted to reduce the role of focus in question-answer congruence to the introduction of alternatives. Zimmermann and Onea (2011), for instance, argue that alternatives (“privileged possible worlds” in their terminology) and the answer space of wh-questions are “sides of the same coin” (p. 1654). For example, the alternatives generated by the free focus in (29a) yield a set of propositions \{Mary went to Paris, Linda went to Paris, Fred went to Paris, ...\}. This set is equal to the denotation of the question, under the common view that a question denotes the set of possible answers.

(29) a. PETER went to Paris.  
     b. Who went to Paris?  

(Zimmermann and Onea 2011)

A second theoretical consequence of the current work is the conceptual link between eviden-
tiality and focus that Quechua researchers have assumed was exemplified by the dual role of 
-mi. We now have a better view on the focus uses of -mi, and this can lead to a more refined 
view on how focus and evidentiality are related.

Let me finish by indicating directions for future research. Besides the theoretical inves-
tigations just mentioned, it is clear that many of the empirical facts reported in this paper 
need further elaboration. I am thinking in particular of investigating more precisely the 
syntactic behavior of the adjectival and verbal reduplication paradigms discussed in section 
4. This work may be aided by what is known of verb doubling focus strategies in African and 
other languages as discussed above; this may give rise to valuable cross-linguistic results on 
the morphosyntax of focus marking. In addition, and from a very different perspective, this 
work could be related to contemporary syntactic research on focus and topic marking, which 
has already been applied to Southern Quechua in Sánchez (2010). How her theory applies to 
Imbabura Quichua, and to the novel data reported in this paper in particular, needs to be 
seen, but these suggestions for future research together promise to be an exciting research 
program that applies contemporary semantic and syntactic theories to the cross-linguistic 
study of focus.

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Stative versus Eventive Predicates and vP-internal Structure

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1 Introduction

The proposal that constitutes the crux of this paper is that the vP-internal syntax of events is not the same as the vP-internal syntax of states (Noonan 1992, 1993; MacDonald 2009; Travis 2010). Specifically, we hypothesize that events have an Inner Aspect projection, located between little v and V as in (1), while states lack this projection, as in (2).

(1) EVENT vP [vP [vP ARG [v INNER.ASPECT [vP [vP ARG [vP [vP V ARG ]]]]]]]
(2) STATE vP [vP [vP ARG [v [vP [vP ARG [vP [vP V ARG ]]]]]]]

The structural difference between event versus state vPs is predicted to have reflexes in different grammatical components including morphology, syntax, and semantics. For instance, within semantics, Inner Aspect regulates telicity with events, but not states (Travis 2010). Additionally, the little v of events introduces an Agent via the DO operator (Dowty 1979), while the little v of transitive states introduces an Experiencer via the HAVE operator (e.g., Noonan 1992, 1993). Here, we focus on the reflexes of the vP-internal structure of events and states relative to syntax and morphology in two unrelated languages, English (Germanic) and Javanese (Austronesian). In particular, we show that, consistent with anti-locality constraints on movement (Abels 2003), VP-fronting is possible with events, but not states. In English, this contrast can be detected via distinct ellipsis strategies; namely, do too and so do ellipsis (possible with states and events) versus do so ellipsis (possible only with events). In Javanese, the contrast is detectable via Voice morphology, which events have but states lack, as well as VP-topicalization and subject-auxiliary answers (possible only with events).

More broadly, the vP-internal structural difference between events and states has theoretical implications relative to the interaction of phase theory and locality theory. The predictions of this interaction are as follows. First, one consequence of the premise that vP is a phase cross-linguistically (Chomsky 1995, 2000, 2001; Legate 2003) is that all extraction moves...
through the edge of vP, defined as the specifier of vP. Second, following Abels (2003), we assume that anti-locality prohibits local movement. To see this, consider (3): movement is "anti-local" in that the complement XP of the head Y^0 cannot move to the local specifier, Spec,YP.

(3) \textit{Anti-locality} \quad *[\text{VP, XP}_j [Y [XP, t_j ]]]]

Taken together, these two premises — phase theory and anti-locality — predict different possibilities for the extraction of VP in an event vP versus a state vP. Since vP is a phase, VP extraction must transit through Spec,vP. As shown in Figure 1, with event vPs, VP extraction is predicted to be licit, as the presence of Inner Aspect means that movement of VP to Spec,vP obeys anti-locality. However, as shown in Figure 2, with stative vPs, movement of VP to Spec,vP violates anti-locality. This is because VP, the complement of v, moves to the local specifier Spec,vP. Since the only movement possible for VP in a state vP violates anti-locality, VP-movement with states is predicted to be impossible.

We test anti-locality in English and Javanese using diagnostics that target VP- or vP-movement. Anti-locality, in conjunction with the vP-internal structure of events and states, predicts that VP-fronting is possible with events but not states. This prediction is confirmed by diagnostics that target VP-movement: do so ellipsis in American English (henceforth English) as well as VP-topicalization and subject-auxiliary answers to yes-no questions in Javanese. Our anti-locality analysis also predicts that, for diagnostics that target vP-movement, events and states will pattern in the same way, and both will undergo movement. This is straightforwardly confirmed in English with so do ellipsis and do too ellipsis, which are licit with both events and states. For Javanese, testing this prediction requires that we control for a contrast between events and states relative to voice-marking: while events are obligatorily marked for voice (analyzed as a VoiceP projection, dominating vP), states lack voice-marking. Once this is controlled for, we observe that VP-fronting with events predictably pied-pipes VoiceP, so that in Javanese, VP and vP-fronting is indistinguishable from VoiceP fronting. With these preliminaries in place, we consider how anti-locality operates in English in section 2, and then turn to Javanese in section 3.

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3 This property of a phase is known as the Phase Impenetrability Condition (PIC; Chomsky 2000). Abels (2003) derives the PIC by assuming phase heads are universal attractors, and therefore universal intervenors.
We investigate the vP-internal structure of states compared to events in English through the following types of ellipsis: \textit{do so} ellipsis, \textit{so do} ellipsis, and \textit{do too} ellipsis. We show that while \textit{do so} ellipsis distinguishes states from events, \textit{so do} and \textit{do too} ellipsis do not. We argue that the presence versus absence of an event/state partition with ellipsis reflects which XP is extracting: VP with \textit{do so} ellipsis; vP with \textit{do too} and \textit{so do} ellipsis. Crucially, in our analysis, ellipsis is derived by movement and so is regulated by anti-locality constraints, as summarized in Table 1. We argue for two points. First, \textit{do so} ellipsis involves VP-fronting, and so is (predictably) only possible with events. Second, \textit{so do} and \textit{do too} ellipsis involve vP-fronting, and so are (predictably) licit with both states and events.

\begin{table}[h]
\centering
\begin{tabular}{lcc}
\hline
\textbf{WHAT MOVES?} & \textbf{VP} & \textbf{vP} \\
\hline
\textbf{STATE} & \times & \checkmark \\
\textbf{EVENT} & \checkmark & \checkmark \\
\hline
\textbf{DIAGNOSTIC} & \textit{do so} ellipsis & \textit{do too} ellipsis; \\
& & \textit{so do} ellipsis \\
\hline
\end{tabular}
\caption{Anti-locality in English (Germanic)}
\end{table}

Before discussing these different types of ellipsis in English, we first motivate the claim that English \textit{do} occurs in (at least) three distinct syntactic positions: C$^0$, T$^0$, and InnerAspect$^0$.

\subsection{The (Different) Syntax of \textit{do so} Ellipsis}

In the present analysis, the sensitivity of \textit{do so} ellipsis to the event/state contrast reflects the syntactic position of \textit{do} and the adverbial element \textit{so}. Consider Figure 3 below. Following Déchaine (1994), we identify at least three different positions for \textit{so}: (i) inverted \textit{so} in the CP domain, with \textit{do} in C$^0$; (ii) affirmative \textit{so} in the TP domain, with \textit{do} in T$^0$; and (iii) anaphoric \textit{so} in the VP domain, with \textit{do} in InnerAspect$^0$.

\footnote{In our analysis, English \textit{do} is always hosted by a Functional head, namely C$^0$, T$^0$ or InnerAspect$^0$. This is consistent with proposals such as Lobeck (1995), Rizzi (1990), and Merchant (2001), who argue on independent grounds that that the ellipsis site must always be licensed in some way. For the cases that we consider here, the ellipsis site is licensed by a Functional head occupied by \textit{do}.}
Figure 3: Syntax of inverted so, affirmative so, and anaphoric so

Positing three distinct positions for so is supported by the following evidence. First, subject-auxiliary inversion indicates that inverted so is in the CP domain, as shown in (4). Following standard assumptions that the subject in its final derived position is located in the specifier of TP in English, auxiliaries higher than the subject must have moved to C\(^0\). The adverbial so in this case is an adjunct to CP (cf. Figure 3).

(4) Jane saw the Eiffel Tower, and so [\(C\) did] Emily

The second position for so locates it in the polarity paradigm, where affirmative so is in complementary distribution with negation, as illustrated in (5). This type of so is located in the head of Polarity within the TP domain.\(^5\) PolarityP is located below TP, and do is in T\(^0\). We argue that do too ellipsis recruits ‘affirmative so’, and exemplifies do within the TP domain.

(5) a. Emily did [POL not] see the Eiffel Tower
b. Emily did [POL so] see the Eiffel Tower

Evidence for a third position for so located below TP is that anaphoric so can co-occur with polarity so and not, as shown in (6). Since do so can occur below polarity, we conclude that do is merged with InnerAspect\(^0\) and so is right-adjoined to VP, as illustrated in Figure 3 above.\(^6\)

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\(^5\) TP or IP (Inflectional Phrase) domain, or ‘extended verbal projection’ (Grimshaw 1991).

\(^6\) Our treatment of so as VP-adjoined is consistent with Bouton (1970) who argues that so is adverbial. In a related vein, see Landman (2006:92-97) and Landman and Morzycki (2003) for a semantic analysis of so as an event-kind anaphor. For relevant discussion, see Houser (2010).
(6)  a. Emily ate her dinner, but Jane did [POL not ] [InnerAsp do [[VP —] so ]]. ANAPHORIC so

b. Q: You didn’t do the laundry did you? A: I did [POL so ] [InnerAsp do [[VP —] so ]]!

Given the different syntax of do so ellipsis, we expect to find different results according to whether or not there is a partition between events and states. Specifically, we predict that only do so ellipsis (with anaphoric so) is sensitive to the vP-internal structure of events and states. This is because it targets a lower projection within vP for ellipsis: VP. Ellipsis that targets a higher XP such as so do or do too ellipsis, we predict, will not show an event/state partition.

2.2 Non-structural Tests of Event versus State in English

Before testing anti-locality constraints with VP-movement in English, we first use non-structural tests to identify states versus events. Non-structural diagnostics for distinguishing events from states in English are well-known (e.g., Smith 1997). For illustrative purposes, we focus on the following three tests: (i) co-occurrence with a manner adverb such as quickly; (ii) co-occurrence with progressive aspect; (iii) compatibility with the imperative. Each of these diagnostics are possible with events but not states. These diagnostics are summarized in Table 2, and illustrated with the event predicate eat in 0 and the state predicate know in (8) below.

| Table 2: Distinguishing event versus state in English |
|-----------------|-----------------|
| EVENT STATE |
| MANNER ADVERB (e.g. quickly) | ✓ | ✗ |
| PROGRESSIVE ASPECT | ✓ | ✗ |
| IMPERATIVE | ✓ | ✗ |

(7) EVENT PREDICATES
a. Emily ate her dinner quickly. MANNER ADVERB
b. Emily is eating her dinner. PROGRESSIVE
c. Eat your dinner! IMPERATIVE

(8) STATE PREDICATES
a. *Emily knew the answer quickly. MANNER ADVERB
b. *Emily is knowing the answer. PROGRESSIVE
c. *Know the answer! IMPERATIVE

7 One aspect of do so ellipsis which we do not discuss here is the fact that it can strand event-modifiers, as in (i). For discussion, see Lakoff and Ross (1976), Déchaine (1993, 1994), Culicover and Jackendoff (2005), and Sobin (2008).

(i) Emily answered the question slowly, but Lucy did so quickly.
2.3 English do so Ellipsis targets VP and Shows an Event/State Partition

We start with the observation that English do so ellipsis is licit with event predicates, but illicit with state predicates (Lakoff 1966). Examples in (9) illustrate the compatibility of do so ellipsis with events; examples in (10) show the incompatibility of do so ellipsis with states.

(9) EVENT PREDICATES
   a. Emily ate her dinner and Jane did so too.  DO SO ELLIPSIS
   b. Emily opened a box and Jane did so too.
   c. Emily washed her laundry and Jane did so too.

(10) STATE PREDICATES
    a. *Emily likes chocolate and Jane does so too.  DO SO ELLIPSIS
    b. *Emily knows the answer and Jane does so too.
    c. *Emily likes that movie and Jane does so too.

We analyze the event/state partition found with do so ellipsis as follows. Following Johnson (2001), we analyze VP-ellipsis as movement of VP to Spec,TopicP (11), with subsequent deletion of the VP. Accordingly, the only difference between VP-topicalization and VP-ellipsis is that the left-peripheral VP is maintained with the former (12), but deleted with the latter (13).

(11) \[
\begin{array}{c}
\text{TopicP} \quad \text{XP} \\
\quad \ldots \text{TP} \\
\quad \ldots \text{SUBJ} \\
\quad \ldots [t_{XP}] \\
\end{array}
\] TOPICALIZATION

(12) Madame Spanella claimed that...
    a. eat carrots, Holly wouldn’t t.
    b. eaten carrots, Holly hasn’t t.
    c. eating carrots, Holly should be t.
    d. eating carrots, Holly’s not t.
    e. eat carrots, Holly wants to t.
    (Johnson 2001:444, (17))

---

8 That the relevant distinction for English do so ellipsis is a state/event partition has been challenged by Kehler and Ward (1999), who argue that eventivity is at play, and by Culicover and Jackendoff (2005) who argue that agentivity is at play. Houser (2010), on the basis of an extensive corpus analysis, concludes that stativity is the most apt descriptor. There remain a small set of cases — Houser identifies 37 in his sample of 994 — where do so is licit with states (i.e. 3.7%). However, almost all of these examples (75%, i.e. 27/37) involve infinitives, as in (i). (Note that the proportion of infinitives in the entire corpus is 57% (594/994).) Our hunch is that something about the syntax of infinitives neutralizes the event/state partition normally found with do so. We leave this to future research.

(i) I should have had a husband and kids by now. I have no idea how I failed to do so.
    (Houser 2010:51, (34n) via PXNatter07-6)

9 We abstract away from cases where a canonically stative verb (e.g. like) is coerced into an activity predicate (e.g. I’m liking this more and more), in which case it tolerates do so ellipsis.

Our friendly amendment to the “topicalization plus deletion” analysis is that what is traditionally described as “VP” ellipsis can in fact target at least two distinct XPs: the lower part of the verbal projection (that is, VP), or the upper part of the verbal projection (that is, vP).\textsuperscript{11} We claim that do so ellipsis targets the lower VP, with the VP moving to the left edge and then deleting.\textsuperscript{12} This is shown in (14) with events and in (15) with states.

\begin{enumerate}
\item[(14)] DO SO ELLIPSIS WITH EVENT PREDICATES
\begin{enumerate}
\item Though Madame S. drank wine, \([\text{VP drink wine}] \text{ H. wouldn’t do so t}\text{VP}.\]
\item Though Madame S. has drunk wine, \([\text{VP drunk wine}] \text{ H. would not have done so t}\text{VP}.\]
\item Madame S. is drinking wine, and even \([\text{VP drinking wine}] \text{ H. will be doing so t}\text{VP}.\]
\item Though Madame S. is drinking wine, \([\text{VP drinking wine}] \text{ H. is not doing so t}\text{VP}.\]
\item Madame S. drank wine, and \([\text{VP drink wine}] \text{ H. wants to do so t}\text{VP}.\]
\end{enumerate}
\end{enumerate}

\begin{enumerate}
\item[(15)] DO SO ELLIPSIS WITH STATE PREDICATES
\begin{enumerate}
\item *Madame S. knows wine, but \([\text{VP know wine}] \text{ H. wouldn’t do so t}\text{VP}.\]
\item *Madame S. has known wine, but \([\text{VP known wine}] \text{ H. hasn’t done so t}\text{VP}.\]
\item *Madame S. is knowing wine, and \([\text{VP knowing wine}] \text{ H. should be doing so t}\text{VP}.\]
\item *Madame S is knowing wine, but \([\text{VP knowing wine}] \text{ H.’s not doing so t}\text{VP}.\]
\item *Madame S. knew wine, and \([\text{VP know wine}] \text{ H. wants to do so t}\text{VP}.\]
\end{enumerate}
\end{enumerate}

As for what accounts for the event/state partition with do so ellipsis, this is where we see the interplay between anti-locality and vP-internal syntax. Consider Figures 4 and 5 below. By hypothesis, do so ellipsis involves VP-movement; that is, movement of the lower portion of the verbal projection. Since vP is a phase, all elements must transit through its edge; Spec,vP. Because event vPs have Inner Aspect, VP-movement to Spec,vP does not violate anti-locality, and do so ellipsis with events is correctly predicted to be well-formed. In contrast, state vPs lack Inner Aspect, so VP-movement to Spec,vP violates anti-locality. This anti-locality violation cannot be avoided: there is no alternative strategy for VP-movement alone since vP is a phase, and by definition, all movement must first extract through Spec,vP. Thus, do so ellipsis with states is correctly predicted to be ill-formed.

\footnote{See Sailor (In progress), among others, who argue that ‘VP’-ellipsis can target an inflectional head above vP.}

\footnote{Our analysis of ellipsis as involving fronting followed by deletion is consistent with that of Hankamer and Sag (1976) who treat both do too ellipsis and do so ellipsis as “surface anaphora.”}
This approach predicts that other types of ellipsis that target vP, rather than VP, will be insensitive to the state/event contrast. This prediction is borne out with English *do too* and *so do* ellipsis, to which we now turn.

### 2.4 English *do too* and *so do* Ellipsis target vP and Show no Event/State Partition

Consider the following examples of *do too* ellipsis, which is licit with both events and states:

**EVENT PREDICATES**

a. Emily ate her dinner, and Jane **did too**.  

b. Emily opened a box, and Jane **did too**.  

c. Emily washed her laundry, and Jane **did too**.

**STATE PREDICATES**

a. Emily likes chocolate, and Jane **does too**.  

b. Emily knew the answer, and Jane **did too**.  

As with *do too* ellipsis, *so do* ellipsis is insensitive to the event/state contrast. Thus, *so do* ellipsis is equally applicable to event predicates (19), and to state predicates, (20).
(19) **EVENT PREDICATES**
   a. Emily ate her dinner, and **so did** Jane. **SO DO ELLIPSIS**
   b. Emily opened a box, and **so did** Jane.
   c. Emily washed her laundry, and **so did** Jane.

(20) **STATE PREDICATES**
   a. Emily likes chocolate, and **so does** Jane. **SO DO ELLIPSIS**
   b. Emily knew the answer, and **so did** Jane.
   c. Emily liked the movie, and **so did** Jane.

We take the absence of an event/state partition with *so do* ellipsis to indicate a vP target:

(21) a. Emily ate her dinner, and \[\text{[vP Jane [VP eat her dinner]] so did Jane} \text{]} t_{vP}\]
   b. Emily likes chocolate, and \[\text{[vP Jane [VP like chocolate]] so does Jane} \text{]} t_{vP}\].

Importantly, the derivations for both *do too* and *so do* ellipsis with either events or states do not violate anti-locality as (i) the whole vP phase moves to a position higher than its local specifier; namely to Spec,TopicP and (ii) this movement is not constrained by any phase boundaries. This is shown for events and states with *so do* ellipsis in Figures 6 and 7:

Figure 6: vP-movement with event vP

Figure 7: vP-movement with state vP

2.5 **States, Events, and Anti-Locality in English**

In sum, we have argued that the state/event partition found with English *do so* ellipsis diagnoses VP-fronting. This contrast is predicted in a phase-based theory of movement, combined with the claim that events have Inner Aspect (22) but states do not (23), and that movement is subject to anti-locality. The presence of Inner Aspect with an event vP predicts that VP-movement will be permitted, as it obeys anti-locality. This is because Inner Aspect is positioned between vP and VP, thereby allowing the VP to move to the specifier of the vP phase without violating anti-locality. Conversely, the absence of Inner Aspect with a state vP predicts that VP-movement will be blocked, as it violates anti-locality. This is because VP-movement with states necessarily
involves movement of the complement (VP) to the specifier of vP, contravening anti-locality. Crucially, with states, there is no alternative way for VP to extract to by-pass an anti-locality violation since vP is a phase, requiring all movement to transit through its edge; Spec,vP.

(22) EVENT vP [vP ARG [v INNER.ASPECT [VP V ARG ] ]]  
(23) STATE vP [vP ARG [v [VP V ARG ]]]

This approach correctly predicts that if vP is fronted — rather than VP — there will be no state/event partition, and this is precisely what happens with English do too and so do ellipsis. Our findings are summarized in Table 1, repeated from above.

<table>
<thead>
<tr>
<th>Table 1: Anti-locality in English (Germanic)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHAT MOVES?</td>
</tr>
<tr>
<td>STATE</td>
</tr>
<tr>
<td>EVENT</td>
</tr>
<tr>
<td>DIAGNOSTIC</td>
</tr>
</tbody>
</table>

3 State versus Event in Javanese

We now turn to state and event predicates in Javanese, and investigate their vP-internal syntax through the lens of VP-topicalization and subject-auxiliary answers. We show that these diagnostics differentiate states from events, with only events being grammatical. We argue that states are ungrammatical due to the same reasons as for English do so ellipsis, where VP-movement is constrained by anti-locality under the vP phase head. With events, we show that Javanese differs from English with the inclusion of an additional projection, VoiceP, which dominates vP. We argue that event predicates involve VoiceP-topicalization in which VP-fronting pied-pipes the VoiceP in Javanese. A preview of this section is summarized in Table 3.

13 Also relevant to our proposal is the behavior of British English (B.E.) do (C.L. Baker 1984, Haddican 2007, Baltin 2012), illustrated in (i) and (ii). Although B.E. do is often described as being insensitive to the state/event contrast, preliminary work with a small number of B.E. speakers suggests there is a subtle difference between do as an aspectual auxiliary (have done) as in (i), and do as a tense auxiliary (might do) as in (ii). For some speakers, the latter shows weak sensitivity to the event/state partition. We put this aside for further research.

(i) John stole some money, and Ella might have done.       EVENT  
   This cheese didn’t cost a lot, but the other one might have done. STATE
(ii) John stole some money, and Ella might do.       EVENT  
   ?This cheese doesn’t cost a lot, but the other one might do. STATE

14 Javanese is a Western Malayo-Polynesian language of the Austronesian family spoken by over 90 million speakers in Indonesia. Javanese is well-known for its speech levels: ngoko ‘Low Javanese’, madya ‘Mid Javanese’, and krama ‘High Javanese’ (Errington 1985, 1988). The data discussed here are from a dialect spoken in Paciran, East Java, and are primarily in ngoko ‘Low Javanese’, the everyday speech in Paciran.
### 3.1 Non-structural Tests of Event versus State in Javanese

Before testing anti-locality constraints in states versus events with VP-movement in Javanese, we first want to establish which predicates are states and which are events using non-structural tests. We have identified three non-structural diagnostics that distinguish states and events in Javanese, as summarized in Table 4.\(^\text{15}\) The first two diagnostics are the same as in English where only events can co-occur with a manner adverb or progressive aspect. The third diagnostic is specific to Austronesian languages. We find that, in Javanese, only events obligatorily have active voice morphology. We give examples of each of these diagnostics in turn.

#### Table 4: Distinguishing event versus state in Javanese

<table>
<thead>
<tr>
<th>EVENT</th>
<th>STATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MANNER ADVERB (e.g. alon-alon ‘slowly’)</td>
<td>✓</td>
</tr>
<tr>
<td>PROGRESSIVE ASPECT (&lt; ewoh ‘busy’)</td>
<td>✓</td>
</tr>
<tr>
<td>ACTIVE VOICE MORPHOLOGY</td>
<td>✓</td>
</tr>
</tbody>
</table>

With respect to the first non-structural test, similar to English, events in Javanese can co-occur with a manner adverb, while states cannot. Manner adverbs can occur sentence finally or in between the subject and predicate in Javanese. The difference in compatibility with manner adverbs is illustrated in (24): the event *mangan ‘eat’* is felicitous with *alon-alon ‘slowly’* but not the state *eling ‘remember’*. Another example is given in (25) with the manner adverb *cepat ‘quickly’*. Here, the event *njahit ‘sew’* is felicitous, while the state *doyan ‘like [food]’* is not.

(24) a. Kana tau **mangan** bubur **alon-alon**
Kana EXP.PERF AV.eat rice.pudding RED-slowly
‘Kana once ate rice pudding slowly.’

b. *Salsa **eling** cerita-ne mbah-e **alon-alon**
Salsa remember story-DEF grandfather-DEF RED-slowly
[‘Salsa remembered her grandfather’s story slowly.’]

\(^{15}\) The imperative *‘nang VP’* does not distinguish events from states in Paciran Javanese, different than English.
A second non-structural test that distinguishes events from states in Javanese concerns the co-occurrence with progressive aspect. Parallel to English, events are felicitous with progressive aspect but states are not. In Paciran Javanese, progressive aspect can be marked with ewoh ‘busy’.

As shown in (26), progressive aspect ewoh ‘busy’ is compatible with events such as numpak ‘ride’, but not with states such as eling ‘remember’. Infelicity with ewoh ‘busy’ is also seen with state predicates ngerti ‘understand’, seneng ‘like’, doyan ‘like [food]’, percoyo ‘believe’, lali ‘forget’, tresno ‘love (KRAMA ‘High Javanese’)’.

A third non-structural test concerns the presence versus absence of active voice morphology on predicates. Similar to many Austronesian languages, in Javanese voice morphology indicates the status of the external argument. Active voice, which indicates that the external argument is an agent, is marked by a homorganic nasal prefix (N) and is obligatorily present with transitive event predicates, but obligatorily absent with state predicates. We illustrate this distinction in Table 5 with a number of different predicates; this list is non-exhaustive.

---

16 Ewoh ‘busy’ is homophonous with ewoh ‘difficult’ in Paciran Javanese. Another marker (la)gek is often glossed as ‘PROG’ (e.g. Robson 2002), but in the Paciran Javanese dialect (la)gek also marks inceptive aspect, and so cannot be used as a diagnostic for event vs. state predicates.

17 The voice contrast between event and state predicates is also found in other Austronesian languages, including Malay (Soh and Nomoto 2009, 2011; Nomoto 2013) and Madurese (Davies 2010:158-160).

18 A closed class of transitive verbs do not take Active Voice prefix, including tuku ‘buy’, gawe ‘make’ (Robson 2002:45 for Standard Javanese). In Paciran Javanese, tuku does not take AV, but nggawe (‘AV.make’) does.
Table 5: Transitive events versus transitive states in Javanese (Horne 1961; our diagnostics)

<table>
<thead>
<tr>
<th>EVENTS HAVE ACTIVE VOICE</th>
<th>STATES LACK ACTIVE VOICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>mangan &gt; N + pangan</td>
<td>doyan ‘like [food]’</td>
</tr>
<tr>
<td>mbuka’ &gt; N + buka’</td>
<td>eling ‘remember’</td>
</tr>
<tr>
<td>moco &gt; N + woco</td>
<td>lali ‘forget’</td>
</tr>
<tr>
<td>nulis &gt; N + tulis</td>
<td>ngerti ‘know’</td>
</tr>
<tr>
<td>nyaberang &gt; N + saberang</td>
<td>percoyo ‘believe’</td>
</tr>
<tr>
<td>nyampur &gt; N + campur</td>
<td>seneng ‘like, enjoy’</td>
</tr>
<tr>
<td>ngombé &gt; N + ombé</td>
<td>sengit ‘hate’</td>
</tr>
<tr>
<td>ngerajang &gt; N + rajang</td>
<td>tresno ‘love’ (Krama)</td>
</tr>
<tr>
<td>ngumbah &gt; N + kumbah</td>
<td>weroh ‘know, see’</td>
</tr>
</tbody>
</table>

An important implication of this diagnostic concerns the structural make-up of event predicates compared to states: only event predicates have VoiceP. We conclude that VoiceP is a separate projection that dominates vP and each has different functions in Javanese: the head of VoiceP houses voice morphology, while the head of vP introduces an external argument in its specifier. This is in line with proposals for the separation of VoiceP and vP in related languages such as Malay, Acehnese, and Sudanese (see Sukarno 2003, Alexiadou et al. 2006, Son 2006, Son and Cole 2008, Cole et al. 2008, Ko 2009, Legate 2012, Kurniawan 2013).

The syntactic difference between events and states in Javanese is illustrated in Figures 8 and 9: the event vP has both Voice and Inner Aspect projections, while the state vP has neither.

Figure 8: Structure of events in Javanese

![Figure 8](image1)

Figure 9: Structure of states in Javanese

![Figure 9](image2)

We have shown three independent, non-structural diagnostics that distinguish event from state predicates in Javanese. The first two tests are applicable in both English and Javanese: in both languages, the ability to co-occur with a manner adverb and with progressive aspect is possible only with events. The third test, which concerns the presence or absence of voice morphology, is specific to Javanese, and sheds light on the structure of events versus states.

19 Though nasal-initial, ngerti ‘know’ has no internal morphological structure, and so cannot be analyzed as having active voice morphology; i.e. it cannot be parsed as *ngerti (AV-know). This is confirmed by the absence of a passive form *di-erti (PASS-know), which establishes that erti does not exist as a base form.

20 See Sato (2012) for an alternative proposal wherein Javanese only has vP; however, states are not discussed.
Events, which obligatory occur with active voice morphology in Javanese, have a VoiceP projection. States lack a VoiceP projection, and concomitantly lack voice morphology.

With these non-structural tests as a baseline, we now investigate further the contrast between events and states in Javanese using structural tests. In the following section, we examine VP-topicalization as a first diagnostic in distinguishing events and states.

3.2 VP-topicalization is Constrained by Anti-locality in Javanese

In Javanese, VP-topicalization partitions events and states: it is licit with events, but illicit with states.\(^{21}\) Consider first VP-topicalization with event predicates, which is well-formed, as exemplified with *nganggo* ‘wear; use’ in (27), *nggotong* ‘lift’ in (28), and *mangan* ‘eat’ in (29).

(27) **CONTEXT:** Opo mbak Jozina oleh nganggo celono reng ngaji?

Can Jozina wear pants to the reciting of the Holy Qur’an?

nganggo celono reng ngaji, Jozi oleh
AV.wear pants to ngaji, Jozi DEON.POSS
‘Wear pants to the reciting of the Holy Qur’an, Jozi is allowed to.’
(Vander Klok 2012:152)

(28) *nggotong watu-ne,* cak Kholiq iso
AV.lift rock-DEF Mr. Kholiq CIRC.POSS
‘Lift the stone, Kholiq can.’ (Vander Klok 2012:153)

(29) *mangan es krim,* Salsa gelem
AV.eat ice cream Salsa willing
‘Eat ice cream, Salsa is willing.’

However, VP-topicalization is ungrammatical with states such as *ngerti* ‘understand’ in (30), *eling* ‘remember’ in (31), and *seneng* ‘like’ in (32).

(30) **CONTEXT:** Opo Pak Bambang tau ngerti boso cino?

‘Did Pak Bambang once learn Chinese?’

* ngerti boso cino, pak Bambang tau
understand language China Mr. Bambang EXP.PERF
[‘Understood Chinese, Mr. Bambang once did.’]

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\(^{21}\) In Paciran Javanese, VP-topicalization (along with subject-auxiliary answers, and auxiliary fronting in yes-no questions) is licit with a syntactic class of “low” auxiliaries, but not with a syntactic class of “high” auxiliaries. The low auxiliaries in Paciran Javanese include *tau* ‘EXP.PERF’, *oleh* ‘DEON.POSS’, *iso* ‘CIRC.POSS’, and *gelem* ‘willing’. On the distinction between high versus low auxiliaries in Javanese, see Vander Klok (2012; under revision) for a parallel analysis to the current one based on successive-cyclic movement and anti-locality.
Opo Mas Adi iso eling ceritone mbohe Adi?

‘Could Mas Adi remember his grandfather’s story?’

*eling cerito-ne mbah-e Adi, mas Adi iso
remember story-DEF grandfather-DEF Adi Mr. Adi CIRC.POSS
[‘Remember the story of Adi’s grandfather, Mr. Adi could.’]

Opo mbak Ndayu oleh seneng mbek gurune?

‘Is Miss Ndayu allowed to like her teacher?’

* seneng mbek guru-ne, mbak Ndayu oleh
like with teacher-DEF, Miss Ndayu DEON.POSS
[‘Like her teacher, Miss Ndayu is allowed to.’]

The event/state partition found with Javanese XP-topicalization can be understood in terms of anti-locality effects. By definition, topicalization requires movement of some XP to the specifier of TopicP in the CP domain, as in (33).

(33) \[
\text{[TopicP} \text{ XP } \ldots[\text{TP SUBJ... [LowAUXP AUX} \text{ [tXP]]}]
\]

If XP-topicalization targets the lower part of the verbal projection, namely VP, then we expect topicalization to be possible for events, but not for states. Accordingly, the event/state partition is due to the interaction of phase-based movement with anti-locality theory. As schematized in (34) below, Javanese transitive states have a vP shell that dominates a VP while Javanese transitive events have two additional positions: (i) a VoiceP projection dominating vP; and (ii) an Inner Aspect projection dominating VP. The structure of events in Javanese differs from their English counterparts in that Javanese events have VoiceP; we show below that this difference results in an alternative strategy for movement.

(34) a. STATE vP \[
\text{[vP ARG} \text{ [v vP V ARG ]]}\]

b. EVENT vP \[
\text{[VoiceP} \text{ [vP ARG} \text{ [v INNER.ASPECT [vp V ARG ]]}\]
\]

We first discuss how the ungrammaticality of VP-topicalization with states is derived before turning to how the grammaticality of VP-topicalization with events is derived in Javanese.

We propose that the ungrammaticality of states with VP-topicalization in Javanese is due to the same theoretical principles that account for why states are ungrammatical with do so ellipsis in English. That is, ungrammaticality of VP-topicalization with a state predicate is due to anti-locality effects under the vP phase head, as illustrated in Figure 10. By hypothesis, XP-topicalization involves VP-movement. Accepting the postulate that vP is a phase cross-linguistically, vP requires all extraction to land first at its edge, the specifier of vP. However, with state predicates, VP-movement to Spec,vP violates anti-locality, which prohibits the complement of a head from moving to the specifier of the same head. Further, because vP is a phase, VP cannot move to a higher projection to avoid violating anti-locality. VP is in effect frozen under the vP phase head.
Turning now to why VP-topicalization is grammatical with event predicates in contrast to states in Javanese, we show that Javanese (predictably) employs a strategy that differs from English, which permits VP-movement with events in the form of *do so* ellipsis. A first possible analysis for Javanese, which we ultimately reject, would be that the VP moves to Spec,TopicP, located in the CP domain. Parallel to English, the VP would be able to extract from vP without violating anti-locality due to the richer vP-internal structure available in event vPs, namely the presence of Inner Aspect. This hypothetical analysis is shown in Figure 11:

![Figure 11: Possible analysis of VP-movement with events in Javanese](image)

However, language-internal properties of Javanese indicate that this analysis is not correct. We know that the VoiceP must front with events in Javanese because active voice morphology is obligatorily present in VP-topicalization of events. This is illustrated in (35), where the topicalized verb must have the active voice form *mangan*, with active voice morphology indicated by the homorganic nasal prefix.

(35) **mangan/*pangan es krim**, Salsa gelem
AV.eat eat ice cream Salsa willing
Eat ice cream, Salsa is willing.

We propose that Javanese employs a different strategy for VP-topicalization of events, which equally avoids anti-locality violations. Taking our cue from the fact that active voice morphology is obligatory with VP-topicalization of events, we propose that Javanese topicalization of events also probes for a VP, but because of the obligatory voice morphology found on event predicates, VP-movement pied-pipes VoiceP. In this analysis, as illustrated in Figure 12 below, VoiceP movement to Spec,TopicP pied-pipes the entire verbal projection,
including the vP phase (which necessarily includes the lower VP). Following proposals for the related languages of Acehnese (Legate 2012) and Sundanese (Kurniawan 2013), the surface morphology is derived by head-movement of V-Asp-v-Voice. Crucially, this analysis does not violate anti-locality, as pied-piping of the VoiceP along with the vP phase to the CP domain does not involve movement from a complement to the specifier of the same head.

Figure 12: VoiceP-movement with Javanese events

In sum, we showed that VP-topicalization partitions events and states in Javanese, with topicalization applying to events but not states. We argued that, in a phase-based theory where vP is a phase, the ungrammaticality of topicalizing state predicates is naturally explained by anti-locality effects, where VP is the goal for movement with states. Moreover, in our analysis, the ungrammaticality of VP-topicalization with states in Javanese is due to the same theoretical principles that derive the ungrammaticality of states with do so ellipsis in English. In addition, we argued that VP-topicalization of events in Javanese involves a derivation that is distinct from English do so ellipsis with events. While English do so ellipsis with events involves VP-movement, Javanese VP-topicalization with events also targets VP, but for morphological reasons VoiceP undergoes movement, bringing the vP (and hence VP) along with it. Our analysis predicts that other VP-preposing constructions will exhibit a state/event partition in Javanese. In the next section, we argue that this prediction is borne out with subject-auxiliary answers.

3.3 Subject-Auxiliary Answers are Also Constrained by Anti-locality in Javanese

In Javanese, subject-auxiliary answers to yes-no questions show the same restrictions as VP-topicalization: they are licit with event predicates\(^\text{22}\), but illicit with state predicates. Each of the following examples are first introduced by a yes-no question which indicates the predicate that the subject-auxiliary answer is associated with. As shown in (36)-(38), subject-auxiliary answers

\(^{22}\text{Parallel to VP-topicalization, Javanese subject-auxiliary answers are grammatical with event predicates only with low auxiliaries. See footnote 21 above.}\)
are possible answers when the yes-no question has an event predicate: ngelangi ‘swim’ in (36),
tuku ‘buy’ in (37), and lungo ‘go’ in (38).\(^{23}\)

(36) A: Dewi iso **ngelangi** toh?
Dewi CIRC.POSS AV.swim FOC
Can Dewi swim?’

B: Iyo, Dewi iso
yes Dewi CIRC.POSS
‘Yes, Dewi can.’ (Vander Klok 2012:166)

(37) A: Salsa oleh **tuku** rok anyar toh?
Salsa DEON.POSS buy dress new FOC
‘May Salsa buy a new dress?’

B: ?Iyo, Salsa oleh
yes Salsa DEON.POSS
‘Yes, Salsa may.’ (Vander Klok 2012:166)

(38) A: mbak Nunung tau **lungo** reng Jakarta toh?
Miss Nunung EXP.PERF go at Jakarta FOC
‘Has Miss Nunung ever gone to Jakarta?’

B: ?Iyo, Nunung tau
yes Nunung EXP.PERF
‘Yes, Nunung has.’ (Vander Klok 2012:166)

Although subject-auxiliary answers are judged to be slightly degraded, all speakers
accept these types of answers. The slight hesitation for these types of answers is due to speakers’
preference to answer a yes-no question with only the auxiliary itself or with a full sentence.
Crucially, when we compare the subject-auxiliary answers with events to those with states, there
is a clear difference in grammaticality judgments. The following examples with state predicates
— ngerti ‘understand’ in (39), eling ‘remember’ in (40) and seneng ‘like’ in (41) — are all
judged as ungrammatical in contrast to the examples with the event predicates above.

(39) A: opo pak Bambang tau **ngerti** boso cino?
Q Mr. Bambang EXP.PERF understand language China
‘Did Mr. Bambang ever understand Chinese?’

B: ?*Iyo, pak Bambang tau
Yes, Mr. Bambang EXP.PERF
[‘Yes, Mr. Bambang once has.’]

\(^{23}\) tuku ‘buy’ and lungo ‘go’ are two examples of a closed class of predicates in Javanese which do not take overt
active voice morphology as mentioned in footnote 18 above. However, they behave as event predicates with
respect to non-structural tests; that is, compatibility with manner adverbs and progressive aspect.
Thus, the prediction that, in Javanese, contexts other than VP-topicalization will also exhibit an event/state partition is borne out: subject-auxiliary answers are possible with events but not states. The rest of this section describes our analysis of subject-auxiliary answers as in fact involving VP-preposing. We show below in section 3.4 that our analysis presents a new, alternative strategy for deriving answer fragments that is distinct from the mechanism invoked in Merchant’s (2004) influential study.

We analyze subject-auxiliary answers as requiring VP-movement to Spec,TopicP just as with VP-topicalization. The derivation of subject-auxiliary answers additionally involves phonological deletion of the VP in its preposed position. On this view, the derivation of subject-auxiliary answers and VP-topicalization differs minimally in that the preposed VP in Spec,TopicP is overtly pronounced in VP-topicalization, but not in subject-auxiliary answers. This minimal difference is sketched in the derivations in (42):

(42) a. VP-TOPOICALIZATION  
    \[\text{[TopicP VP } \text{[TP SUBJ... [LowAuxP AUX... [tP]]]]}\]

b. SUBJECT-AUXILIARY ANSWERS  
    \[\text{[TopicP VP } \text{[TP SUBJ... [LowAuxP AUX... [tP]]]]}\]

Because of this parallel derivation, the contrast between events and states with subject-auxiliary answers is analyzed in the same way as VP-topicalization, involving the interaction of phase-based movement with anti-locality.

Parallel to VP-topicalization with states, subject-auxiliary answers with states are ungrammatical in Javanese because of anti-locality violations due to the position of VP as a complement to the phase head vP. Specifically, Topic probes for a VP goal; the lower portion of the verbal projection. The VP must first extract from the vP phase via its edge; Spec,vP. However, this precise movement — moving a complement of a head to its local specifier — is

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24 More specifically, we show in this section that with events, VoiceP is pied-piped with VP-movement in Javanese, just as with VP-topicalization.
banned because it violates anti-locality, as illustrated in Figure 13. Because of the impossibility of VP-extraction, derivations that require VP-preposing with states result in ungrammaticality.

Figure 13: *VP-movement with states in Javanese

Subject-auxiliary answers with events are grammatical in Javanese. As argued for VP-topicalization with events in Javanese, Topic probes for a VP, but obligatory active voice morphology on event predicates forces VoiceP to be pied-piped. Movement of VoiceP to Spec,TopicP in the CP domain does not violate anti-locality because this movement is not to the specifier of its immediately dominating projection (Spec,AuxP; within the IP domain). VoiceP-movement takes along its complement vP and all syntactic material within vP, as in Figure 14 below. Once in its preposed position, the derivation of subject-auxiliary answers differs from VP-topicalization only in that the string is phonologically deleted once sent to Spell-Out. As a consequence, the preposed VoiceP is not overtly pronounced as it is in VP-topicalization.

Figure 14: VoiceP-movement with events in Javanese

3.4 VP-movement and VP-Deletion: Implications for the Analysis of Fragments

The phase-based anti-locality analysis predicts that other instances of VP-movement in Javanese will show the same restrictions found with VP-topicalization. This prediction is borne out with subject-auxiliary answers, which are grammatical with events, but not states. In our analysis, the derivation of subject-auxiliary answers differs minimally from that of VP-topicalization: both
involve VP-movement, but once the VP is in its preposed position, subject-auxiliary answers involve an additional step of phonological deletion.

This analysis also presents a new strategy for deriving fragment answers, different from the kind of analysis argued for in Merchant (2004). Although Merchant (2004) does not discuss subject-auxiliary fragments, the answer fragments that he does discuss involve DP, VP, or AdvP constituents, as in (43)-(45) respectively:

(43) a. Who did you see?  
    b. [DP John]  
       (Merchant 2004: 673, (37))

(44) a. What does Bush want to do to Iraq?  
    b. [VP Attack it]  
       (Merchant 2004: 673, (39))

(45) a. When did he leave?  
    b. [AdvP After the movie ended]  
       (Merchant 2004: 673, (38))

Merchant (2004) proposes that these fragment answers involve movement of the fragment itself to the CP-domain (possibly Focus), followed by ellipsis of the remaining clause. For instance, to derive the DP answer fragment in (43)b, Merchant argues that the DP John has moved to the specifier of a functional head in the CP-domain. An E feature on F triggers non-pronunciation of TP. (See Merchant (2004:675) for details.)

(46) [FP [DP John] F_E [TP she saw tDP]]  

The analysis that we advocate here is opposite to that proposed in Merchant (2004) in the sense that it is the constituent that is not pronounced — the topicalized VP — which moves to the CP domain, and the answer fragment that is pronounced — the subject-auxiliary sequence — remains in situ. In other words, the comment is pronounced, whereas the topic is phonologically deleted. A full-fledged comparison of these different approaches to fragments is beyond the scope of this paper, but is a promising avenue for future research.

4 Conclusion

We have argued that, in unrelated languages, vP-internal structural differences between state and event predicates can be detected in contexts that involve VP-fronting. In particular, the absence of Inner Aspect with state vPs means that VP-fronting is illicit because it violates anti-locality. Our anti-locality analysis predicts that VP-fronting will display a state/event partition, but that vP-fronting will not. This provides an elegant account of the state/event partition found with English do so ellipsis (which we analyze as VP-fronting), and the absence of a state/event partition with English so do and do too ellipsis (which we analyze as vP-fronting). Our findings are summarized in Table 1, repeated from above.
Table 1: Anti-locality in English (Germanic)

<table>
<thead>
<tr>
<th>ELLIPSIS TYPE</th>
<th>WHAT MOVES?</th>
<th>VP</th>
<th>vP</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATE</td>
<td>✗</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>EVENT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>EXAMPLE</td>
<td>do so ellipsis</td>
<td>do too ellipsis;</td>
<td>so do ellipsis</td>
</tr>
</tbody>
</table>

Our analysis also successfully accounts for the deployment of VP-topicalization in Javanese, which also shows a state/event partition. Once voice morphology is taken into account, we observe that states (which lack voice marking) predictably fail to undergo VP-topicalization, while events (which have obligatory voice marking) undergo VoiceP topicalization (where VoiceP is pied-piped by VP). In addition, our analysis captures the fact that the state/event partition generalizes to subject-auxiliary answers, which we argued involve VP-topicalization and subsequent deletion. Table 3, repeated from above, summarizes our findings.

Table 3: Anti-locality in Javanese (Austronesian)

<table>
<thead>
<tr>
<th>WHAT MOVES?</th>
<th>VP</th>
<th>VoiceP</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATE</td>
<td>✗ (n/a)</td>
<td>✓ (n/a)</td>
</tr>
<tr>
<td>EVENT</td>
<td>(n/a)</td>
<td>✓</td>
</tr>
<tr>
<td>DIAGNOSTIC</td>
<td>Topicalization</td>
<td>Subj-aux answers</td>
</tr>
</tbody>
</table>

In closing, we draw attention to three consequences of this analysis. First, we observe that the same operation — “VP” topicalization — can target VP or vP. More generally, cross-linguistically, the same movement operation may target different XPs. Specifically, we have argued that “VP-topicalization” targets: (i) VP (states in Javanese and English); (ii) vP (events and states in English); (iii) VoiceP (events in Javanese).

A second consequence of our analysis is that the same language can target VP or vP. That is, within one language, the same mechanism may target different XPs. “VP”-ellipsis in English targets either (i) VP (do so ellipsis) or (ii) vP (so do, do too ellipsis). This converges with earlier studies which, on independent grounds, have argued that “VP”-ellipsis targets either vP (Johnson 2004; Aelbrecht 2010; Merchant 2013) or a higher inflectional head (Sailor, in progress).

Third, the idea that events have a richer structure than states do has proven useful for the analysis of ellipsis, of topicalization, and of yes/no questions. We anticipate that paying closer attention to the syntactic factors that give rise to event/state partitions in different languages will uncover previously unnoticed patterns, as well as improve the empirical coverage and granularity of analyses.\(^{25}\)

\(^{25}\) See Rouveret (2012) for a phase-based analysis of how the state/event partition presents itself in Welsh.
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