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Edited by:
Heather Bliss, Meagan Louie, and Murray Schellenberg

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PREFACE

Volume 25 of the University of British Columbia Working Papers in Linguistics (UBCWPL) series presents the Proceedings of the 2009 Northwest Linguistic Conference (NWLC), which is an annual conference for graduate students in linguistics to share their work in a friendly atmosphere, and meet colleagues from other universities, both locally and internationally. The venue rotates on a four year cycle, between University of British Columbia, Simon Fraser University, University of Victoria, and the University of Washington. This year it was held at the University of British Columbia in Vancouver, British Columbia, Canada, April 25-26, 2009.

We would like to thank the authors for their submissions.

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Subject obviation and case

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In this paper I explore the phenomenon of subject obviation, i.e. ban on coreference between the pronominal subject of the embedded subjunctive clause and the subject of the matrix clause. The obviation effects arise in Russian, while in Serbo-Croatian, the obviation effects are absent if the embedded subject is phonologically null. I investigate the structure of Russian and Serbo-Croatian embedded indicative and subjunctive clauses, and propose that a featural approach to binding, according to which binding relations can operate on featural complexes, can successfully explain the obviation effects in Russian. I adopt the framework by Pesetsky and Torrego 2001, 2007, and demonstrate that the obviation effects are linked to nominative case, and only nominative-marked elements are affected. I further argue that the embedded null subject of the subjunctive clauses in Serbo-Croatian is PRO, and therefore lacks nominative case. This property explains the contrast in obviation between Russian and Serbo-Croatian.

1 Introduction

The phenomenon of subject obviation effects in subjunctive clauses when the pronominal subject of the subordinate subjunctive clause cannot be coreferential with the matrix subject has received some attention in the recent literature based on a number of languages (Chomsky 1981, Picallo 1985, Farkas 1992, Avrutin and Babyonyshev 1997, Hornstein 2007). This sharply contrasts with indicative clauses, where such coreference is possible and with infinitival complements, where such coreference is mandatory. In this paper I explore the subjunctive embedded clauses in Russian and Serbo-Croatian. Subject obviation arises in Russian with nominative, but not dative subjects, while in Serbo-Croatian, when the embedded subject in phonologically empty, there are no obviation effects.

The organization of this paper is the following. In section 2 I provide the basic overview of Russian and Serbo-Croatian subjunctives and demonstrate the phenomenon of subject obviation. In section 3 I outline the theoretical framework which I use to analyze the obviation effects. Section 4 contains the analysis of the indicative and subjunctive embedded clauses in Russian in the framework of Pesetsky and Torrego 2007, and the explanation of the obviation effects based on tense sharing. I also show that the nominative case of the embedded subject plays an important role in this process. Section 5 deals with the case of Serbo-Croatian subjunctives, where I argue (following Miskelijn 2006) that the null subject of subjunctive complements is PRO, and therefore does not participate in the tense sharing. Based on that I explain away the absence of obviation effects with the null subject in Serbo-Croatian. Section 6 concludes the paper.

2 Russian and Serbo-Croatian subjunctive clauses

2.1 Preliminary data on Russian subjunctives

Russian subjunctive clauses are introduced by the complementizer *čtoby*. The verb in the subjunctive clause is morphologically in the past tense, and no other verbal forms are allowed, as shown

* I'm grateful to John F. Bailyn and Daniel Finer for discussions about the ideas presented in this paper. I would also like to thank the audience of NWLC 2009 at the University of British Columbia, as well as the audiences of SLS 2 in Berlin, and PLC 33 at the University of Pennsylvania, and my colleagues at the Linguistics Department of Stony Brook University for helpful comments on and discussion of this paper. All errors of course remain my own.

in the example (1):

(1) a. Ivan xočet čtoby Maša pročitala/čitala "Vojnu i Mir"
I. wants that.subj M. read.pst.perf/pst.imperf "War and Peace"
'Ivan wants for Masha to read "War and Peace"'
b. * Ivan xočet čtoby Maša čitaet/pročitaet/budet čitat' "Vojnu i Mir"
I. wants that.subj M. read.pres/fut.perf/fut.imperf "War and Peace"

On the contrary, Russian indicative clauses are introduced by the complementizer *čto*. The restriction on the morphology/tense of the verb is not present in indicative clauses, as illustrated by the example (2):

(2) a. Ivan skazal čto Maša pročitala/čitala "Vojnu i Mir"
I. said that M. read.pst.perf/pst.imperf "War and Peace"
'Ivan said that Masha have read/was reading "War and Peace"'
b. Ivan skazal čto Maša čitaet/pročitaet/budet čitat' "Vojnu i Mir"
I. said that M. read.pres/.fut.perf/.fut.imperf "War and Peace"
'Ivan said that Masha is reading/will have been read/will be reading "War and Peace"

Despite the fact that the verb in the embedded subjunctive clause is morphologically in the past form, the event denoted by embedded clause is not situated in the past, either with respect to the event in the matrix clause, or with respect to the speech act. On the contrary, the event described in the embedded clause (a reading of "War and Peace" in (1a)) is *irrealis* and might happen in the future with respect to the time of the event described in the matrix clause (the volition act in (1a)).

2.2 Preliminary data on Serbo-Croatian subjunctives

Similar to Russian, Serbo-Croatian does not exhibit any specific subjunctive morphology on the verb. The embedded verb is morphologically present indicative. The subjunctive embedded clause is introduced by the complementizer *da*. The interpretation of the subjunctive sentences is mostly similar to Russian, determined by the time frame of the matrix verb.

There are two types of subjunctives in Serbo-Croatian, illustrated in example (3).

(3) a. (On) pokušava da e otvori kutiju (* sutra).
(He) trying that.subj open box tomorrow
'He is trying to open the box (tomorrow)' [Type I]
b. Marija želi da e kupi klavir (sutra).
M. wants that.subj buy piano tomorrow
'Maria wants to buy a piano (tomorrow)' [Type II]

Type I subjunctive complements are used in control contexts, selected by the verbs such as *nam(j)eravati* 'intend', *izb(j)egavati* 'avoid' and *pokušavati* 'try' (according to Tomić 2006). Type II subjunctive complements are selected by volitional verbs such as *ht(j)eti* 'will/want', *žel(j)eti* 'wish', *tražiti* 'demand' and in their distribution are close to Russian subjunctives. Further, overt (lexical or pronominal) subjects are not allowed in Type I subjunctives but allowed in Type II, as shown in (4).

(4) a. (On_i) je pokušao da * $on_{i/j}$/Marko otvori kutiju.
(he) aux try that.subj he/Marko open box
'He is trying to open the box'
b. (On) hoće da Marija ode.
(he) wants that.subj M. leave
'He wants Maria to leave'

Because of this similarity in the distribution of the Russian subjunctives and Serbo-Croatian Type II subjunctives, in what follows I will only concentrate on them.

2.3 The obviation phenomenon in Russian and Serbo-Croatian

In this section I illustrate some syntactic differences between subjunctive and indicative clauses in Russian related to the well known phenomenon of obviation discussed in detail in Avrutin and Babyonyshev 1997. This phenomenon is illustrated in the examples in (5) (ibid.):

(5) *Subject obviation*[1]

a. Volodja$_i$ xočet čtoby on$_{*i/j}$ potseloval Nadju
V. wants that.subj he kissed N.
'Volodja wants that he kiss Nadja.'

b. Volodja$_i$ skazal čto on$_{i/j}$ potseloval Nadju
V. said that he kissed N.
'Volodja$_i$ said that he$_{i/j}$ kissed Nadja.'

In example (5a), where the embedded clause is subjunctive, the pronominal subject of the embedded clause cannot be coindexed with the matrix subject. However, when the embedded clause is indicative as in example (5b), coreference between the matrix and embedded subjects is possible. As can be seen from the examples (6), the indicative-subjunctive distinction only holds of coreference between the matrix subject and the embedded subject. In contrast, coindexing of the matrix subject with the embedded object is possible in both types of clauses:

(6) a. Volodja$_i$ xočet čtoby Nadja ego$_{i/j}$ potselovala
V. wants that.subj N. him kissed
'Volodja$_i$ wants Nadja to kiss him$_{i/j}$'

b. Volodja$_i$ skazal čto Nadja ego$_{i/j}$ potselovala
V. said that N. him kissed
'Volodja$_i$ said that Nadja kissed him$_{i/j}$.'

Passivization of the object in the embedded subjunctive clause gives rise to obviation effects, as demonstrated in (7).

(7) *Passive sentences:*

a. *Ivan$_i$ xočet čtoby on$_i$ byl nakormlen
I. wants that.subj he was fed
'Ivan wants to be fed'

b. Ivan$_i$ xočet čtoby kniga byla im$_i$ pročitana
I. wants that.subj book was he.inst read
'Ivan$_i$ wants the book to be read by him$_i$'

More data comes from consideration of dative experiencer subjects in Russian, such as in (8).

(8) Volodja$_i$ xočet čtoby emu$_i$ bylo xorošo
V. wants that.subj he.dat was good
'Volodja wants to feel good'

[1] Russian is not a pro-drop language, therefore examples like in (i) would be ungrammatical regardless of the reading:

(i) a. * Volodja xočet čtoby *pro* potseloval Nadju
V. wants that.subj kissed N.

b. * Volodja skazal čto *pro* potseloval Nadju
V. said that kissed N.

In example (8) the experiencer of the embedded subjunctive clause is a dative marked pronoun *emu* 'he.dat'. Bailyn 2004 has proposed that in dative experiencer constructions the dative subjects are located in the Spec,TP position. Under these assumptions about the structural position of dative experiencer, this example presents a surprising contrast with the case of subject obviation in (5a). Both of these examples ((8) and (5a)) have embedded subjunctive clause with the pronominal subject occupying Spec,TP position. However, in case of nominative marking on embedded pronoun the obviation effects arise, while when the embedded pronominal subject is marked with dative case, the coreference between the matrix and embedded subjects is possible.

Now, I concentrate on the Serbo-Croatian Type II subjunctives, since they allow overt subjects and therefore can be directly compared with Russian. Consider the paradigm illustrated in (9).

(9) *Obviation effects in Serbo-Croatian:*

a. (On$_i$) hoće da e$_{i/*j}$ ode.
(he) wants that.subj leave
'He wants to leave'

b. (On$_i$) hoće da on$_{*i/j}$ ode.
(he) wants that.subj he leave
'He wants to leave'

In (9a), when the embedded subject is phonologically null, the coreference with the matrix subject is mandatory, and the null-element cannot refer to any other entity. In (9b), when the embedded subject is an overt pronominal, the obviation effects similar to Russian arise. Overt embedded pronominal subjects cannot be coreferential with the matrix subject. To summarize, obviation effects are absent in Serbo-Croatian if the subject is phonologically empty and present (similar to Russian) if it is an overt pronominal.

3 Theoretical framework

3.1 Feature-sharing Agree

In my analysis of the indicative/subjunctive distinction in Russian, I follow the framework outlined in Pesetsky and Torrego 2007, which I will briefly summarize below. It is based on the possibility of feature sharing, and allows a feature to have several instances in various locations within the syntactic tree. The crucial operation for Pesetsky and Torrego is the following version of Agree stated in (10).

(10) *Agree: Feature Sharing Version (from Pesetsky and Torrego, 2007)*

a. An unvalued feature F (a probe) on a head H at syntactic location α (F_α) scans its c-command domain for another instance of F (a goal) at location β (F_β) with which to agree.
b. Replace F_α with F_β, so that the same feature is present in both locations.

For Pesetsky and Torrego's 2007 analysis, application of the Feature-Sharing version of Agree operation may create multiple instances of a single feature in various syntactic locations within the structure. The mechanism is as follows: after probing by a head with an unvalued feature, the features of a goal and a probe enter into an Agree relation, and both become instances of the same feature.

Another crucial assumption which is needed to maintain feature sharing is the elimination of Chomsky's Valuation/Interpretability Biconditional that allows only uninterpretable and unvalued <*u*F -val> and interpretable and valued <*i*F +val> features. In the new system by Pesetsky and Torrego 2007, two more types of features are allowed: uninterpretable and valued <*u*F +val> and interpretable and unvalued <*i*F -val>. Furthermore, Pesetsky and Torrego follow Chomsky 2001 in proposing that unvalued features act as probes, but differ in allowing interpretable and unvalued <*i*F -val> features to act as probes (which were absent for Chomsky).

Tense-features on the finite verb and T can serve as examples of the features which in Pesetsky and Torrego's framework violate Chomsky's biconditional. For instance, the T-feature on T is

interpretable (since it is a "locus of semantic tense interpretation"), but unvalued, and that allows it to be a probe. On the contrary, the T-feature on a finite verb is uninterpretable (no semantic interpretation happens within the verb itself), but valued, since the verb comes from the lexicon with morphologically specified tense. This feature specification allows the finite verb to serve as a goal.

One more crucial point for Pesetsky and Torrego is the adoption of the Thesis of Radical Interpretability from Brody 1997, given in (11):

(11) *Thesis of Radical Interpretability (from Brody 1997):*
Each feature must receive a semantic interpretation in some syntactic location.

The Thesis of Radical Interpretability means that every feature must have at least one interpretable instance, and an uninterpretable feature must delete at the interface with semantics once it is valued: that means that uninterpretable features must get valued in order to be deleted.

3.2 Move-F and feature approach to binding

The operation of covert feature movement, "Move-F," was considered in Chomsky 1995. A set of formal features (FF) of a head can adjoin to another head forming a complex, consisting of features of both heads. For instance, features of a transitive verb's object can adjoin to the complex *v*+V, which is formed by the raising of the main verb V and adjoining it to the *v*. The result of this adjunction is a complex *v*+V+FF(object). That, for instance, would allow object agreement to be checked and accusative case to be assigned. In a similar fashion, the formal features of the subject under certain circumstances can adjoin to T, resulting in the complex T+FF(subject). Adopting the framework of Pesetsky and Torrego 2007, I propose (similar to Watanabe 2000) that Move-F happens after probing by an unvalued feature, and as a result the set of formal features of the goal adjoins to the probe. The phonological movement accompanying Move-F takes place only if there is a relevant EPP feature present on the probe.

In what follows I will elaborate on the mechanism of feature raising by revisiting the proposal by Watanabe 2000, who argues that (interpretable) features of the goal are necessarily copied to the probe under Agree. Watanabe compares the approach of Chomsky 1998 with the approach of Chomsky 2000. Chomsky 1998 argues that feature checking always involves the adjunction of the features of the goal to the probing head. For instance, under this approach, subject raising to T from the initial configuration in (12a) gives rise to the configuration in (12b), where the formal features of the subject are copied onto the T-head, and if T is endowed with the EPP feature, the subject ends up phonologically realized in the Spec,TP position. Under the latter approach by Chomsky 2000, the idea of obligatory feature raising under Agree relation is abandoned: The Agree relation takes place without feature displacement. Getting back to the case of subject to T raising, according to Chomsky 2000, the Agree operation between T and the subject does not result in the formal featural complex of the subject being copied to the T-probe. The resulting configuration under this approach is given in (12c).

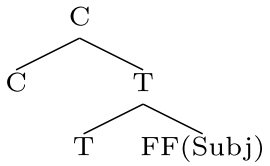
(12) a. T $[_{vP}$ Subj ...]
b. $[_{TP}$ Subj $[_{T}$ $[_{T}$ FF(T)+FF(Subj)] $[_{vP}$ t_{subj} ...] (Chomsky 1998)
c. $[_{TP}$ Subj $[_{T}$ FF(T)] $[_{vP}$ t_{subj} ...] (Chomsky 2000)

Based on complementizer agreement facts from Dutch, following Zwart 1997, Watanabe argues that the correct approach is the one resulting in the configuration in (12b). He proposes that the agreement morphology on the complementizer in Dutch comes from the features of the subject itself. He argues that φ-features of the subject, being interpretable, are not deleted after raising of the featural complex of the subject to T. After adjunction of T to C these features are still active, giving rise to the agreement morphology on the complementizer. The examples of complementizer agreement in the Groeningen dialect of Dutch are given in (13) following Zwart 1997.

(13) *Complementizer agreement in Dutch (Zwart 1997, Watanabe 2000):*
a. ... of ik kom
whether I come

b. ... of-s whether-2sg toe you kom-s come-2sg

c.



Branigan 2000 argues that binding theory is sensitive not only to the overt movement of the constituents, but that also movement of the formal features can influence the binding relations. His arguments are based on consideration of the English ECM constructions, such as the one shown in (14a).

(14) *English ECM constructions (Branigan 2000):*

a. Perry proved [[Jill and Tony]$_i$ to have lied] during each other$_i$'s trials.
b. Perry proved [[Jill and Tony]$_i$ [$_{vP}$ e [$_{TP}$ t$_i$ to have lied] during each other$_i$'s trials]]
c. Perry [$_{vP}$ proved+FF(Jill and Tony)$_i$ [$_{TP}$ [Jill and Tony]$_i$ to have lied] during each other$_i$'s trials]

In (14a), the reciprocal *each other* is located in the matrix clause, while its antecedent is in the embedded clause. However, no violation of Principle A occurs, and the sentence is grammatical. Two possibilities, demonstrated in (14b) and (14c), have been proposed in the literature. According to (14b), the embedded subject is in fact located in the matrix clause after undergoing raising to object. This raising allows the reciprocal to become bound by the raised embedded subject, and therefore Principle A is satisfied. The alternative analysis, shown in (14c), involves the raising of the formal features of the embedded subject to the matrix clause, and it is the formal features of the subject that serve as an antecedent to the reciprocal. In order to choose between two possible solutions, Branigan combines the ECM constructions like the ones in (14) with the locative inversion.

(15) *English ECM, locative inversion (Branigan 2000):*

a. The photos [$_{VP}$ showed [$_{TP}$ behind this very hedge had been hiding [Jill and Tony]$_i$] during each other$_i$'s trials].
b. the photos [$_{VP}$ FF(Jill and Tony)$_i$-showed [$_{TP}$ behind this very hedge to have been hiding [Jill and Tony]$_i$] during each other$_i$'s trials]

(15a) is similar to (14a), but the locative phrase *behind this very hedge* has undergone locative inversion. Locative inversion is commonly assumed to be the dislocation of the locative phrase to the TP-peripheral position. Under this assumption, it is clear that the embedded subject stays within the embedded clause, and there is no raising to object. Therefore the only possible analysis of the sentence in (15a) involves feature raising of the embedded subject to the matrix clause, as demonstrated in (15b) and these formal features serve as a binder for the reciprocal, satisfying the Principle A.

The featural approach to binding can be summarized as in (16).

(16) *Featural approach to binding:*

a. A set of formal features of a nominal element is indistinguishable from a nominal element itself from the point of view of the computational system.
b. Binding theory operates on sets of formal features, even if their displacement is not accompanied by pied-piping of phonological material.

4 An analysis of indicative/subjunctive distinction in Russian

In this section I apply the theoretical framework outlined in section 3 above to subjunctive and indicative clauses in Russian. I assume that even though the verb in the subjunctive clauses is morphologically past, it bears different temporal features (I elaborate on this issue below). For instance, in some Romance languages (Spanish, Italian, and French), the subjunctive is a separate form of the verb,

distinct from the past form. I propose that the fact that the subjunctive form of the verb is identical to the past tense form in Russian is just an idiosyncrasy.

Further, from the data presented in (1) and the semantic interpretation of the subjunctive sentences which I provided above in section 2.1, I conclude that the subjunctive form of the verb bears an unvalued T feature, unlike verbs in other finite forms (for example, past).

(17) a. Ivan xočet čtoby Maša pročitala "Vojnu i Mir"
I. wants that.subj M. read.subj "War and Peace"
'Ivan wants for Masha to read "War and Peace"' [Subjunctive]

b. Ivan skazal čto Maša pročitala "Vojnu i Mir"
I. said that M. read.pst.perf "War and Peace"
'Ivan said that Masha have read/was reading "War and Peace"' [Indicative]

That means that in the sentences in (17) the verb *pročitala* 'read' comes from the lexicon embedded with different features (even though those two forms are morphologically indistinguishable): in sentence (17a) it bears a <*u*T -val> feature, whereas in the sentence (17b) it bears a valued instance of the T feature <*u*T +val>.

This proposal about the subjunctive vs. indicative clauses is summarized below in (18) in what I will call the Subjunctive parameter:

(18) *The Subjunctive parameter:*
a. (In Russian,) the subjunctive form of the verb bears a <*u*T -val> feature;
b. (In Russian,) finite forms of the verb bear <*u*T +val> feature.

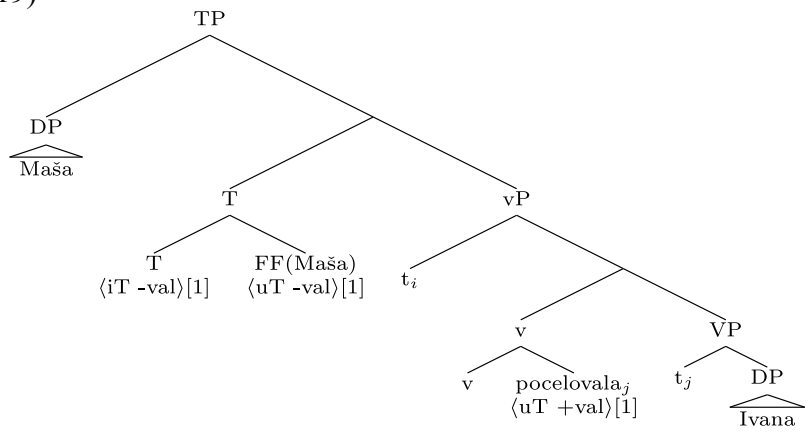
I claim that the adoption of the Subjunctive parameter in (18), along with the proposal about the featural approach to binding (Watanabe 2000) within the Pesetsky and Torrego 2001, 2007 framework allows us to account for the asymmetries between indicative and subjunctive clauses illustrated in section 2.

In what follows I will show how the derivation of indicative clauses works in Russian, and then proceed to the subjunctive.

4.1 Indicative clauses

Recall that by the Subjunctive parameter (18), indicative verbs have <*u*T +val> T-feature. The derivation proceeds in a standard bottom-up way. The verbal projection vP is built in a standard manner with V adjoining to v. If the embedded clause of a sentence is indicative (as in (17b)), after T is merged into the tree structure, its interpretable but unvalued feature <*i*T -val> probes to find its goal, finding it in the <*u*T -val> feature on the subject DP (assuming that Nominative case is an instantiation of the T-feature on D, as in Pesetsky and Torrego 2001). After the Agree operation takes place, the features on T and the subject D are linked, and become instances of the same feature. However, since the subject DP's T-feature is unvalued, the shared T feature also remains unvalued. The EPP subfeature of T-feature on T is active, and the featural complex of the embedded subject attaches to T forming a complex T+FF(emb. subj.). However, because only valued features can be interpreted, T must probe further down in the tree in order to find a value. The second probing finds a goal <*u*T +val> on the finite verb within the vP projection. After the Agree operation, all three T-features – those on T, the subject DP and V become instances of the same feature, and the valuation of the <*i*T> on T takes place, resulting in the valuation of <*u*T> on subject DP also. After this step, all T-features in the embedded clause are valued. The subject EPP, being a phonological condition, will be satisfied by further raising of the embedded subject to Spec,TP. Now, there are no unvalued features left in the embedded clause, and its derivation can stop. The resulting structure of the embedded TP before final valuation takes place is given in (19).

(19)



Notice that there is no movement to the CP domain, as nothing in the CP domain will be able to probe and attract a goal. After merging the complementizer *čto*, the lower CP phase is completed with no elements but the complementizer at its edge. After that the material is sent off to interpretation.

4.2 Subjunctive clauses

In the case of Russian subjunctive clauses, applying the analysis proposed above gives surprisingly different results. Following the proposed Subjunctive Parameter (18), I claim that the subjunctive verb comes from the lexicon with the unvalued T feature <*u*T -val>. This contrasts with the verbs in indicative clauses, which enter the numeration with valued T features. Also, I would assume the presence of *čtoby* in the numeration for selectional purposes (I would claim that volitional predicates, such as *xotet'* 'to want', select CPs headed by *čtoby*. Therefore, if *čtoby* is not present in the numeration, the derivation will crash.). I assume that *čtoby* also comes from the lexicon endowed with an uninterpretable unvalued <*u*T -val> feature[2]. Now let's consider the derivation of the subjunctive clauses.

The embedded *v*P is built in standard fashion. After that T is merged into the structure. In a similar way to the case of indicative clauses, the embedded T probes and Agrees first with the subject DP, and then with the verb (to be more precise, *v*+V complex), resulting in feature sharing among all these elements, making the T-features on T, the subject DP and *v*+V all being instances of the same feature. In a similar way to the indicative case, because of the EPP subfeature of the T-feature on T, the formal featural bundle of the embedded subject adjoins to T, forming a complex T+FF(emb. subj.). However, unlike in the case of indicative clauses, no valuation can occur at this point, since the T-feature on the embedded subjunctive verb is not valued. Therefore the derivation proceeds by the merging of *čtoby* in the C-head position.

The T-feature of *čtoby* is unvalued, and therefore must probe down to find its goal. The first goal it finds is a T+FF(emb. subj.) complex with unvalued T-feature. Feature sharing Agree takes place, and the instances of the T-feature on *čtoby*, on T, on the embedded subject, and on the embedded verbal complex become instances of the same feature. Further, the featural bundle created in T adjoins to *čtoby*. and the resulting configuration from the completion of the embedded CP-phase is given in (20), where the index [1] shows which T-features are instances of the same feature, and DP_{emb} is the subject of the embedded clause.

(20) a. [$_{CP}$ čto **by$_{<uT\text{ -val}>[1]}$+T$_{<iT\text{ -val}>[1]}$+FF(emb. subj.)** [$_{TP}$ DP_{emb} *v*+V$_{<uT\text{ -val}>[1]}$ ...

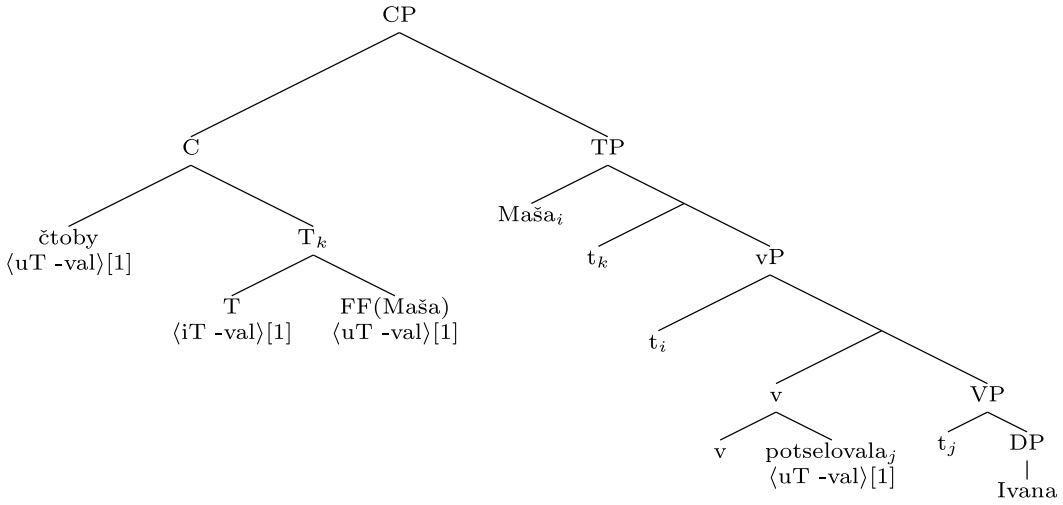
[2] Indirect evidence for this comes from the fact that closely related to Russian Polish shows complementizer agreement effects similar to those mentioned for Dutch in Zwart 1997:

(i) *Polish complementizer agreement:*

a. Chcę żebyś (ty) to zrobił
want that.subj.2sg (you) it do
'I want you to do it'

b. Jan chce żeby pro przyjechał
J. want that.subj.3sg arrive
'Jan wants him to arrive'

b.



Crucially, even though there are unvalued features by the end of the derivation of this phase, the derivation does not crash, since the unvalued T-feature was able to move to the edge of CP-phase to the C-head position (bolded in (20)), and therefore will remain accessible for further Agree relations with the probe from the higher domain.

Next, the elements of the matrix clause are merged in the structure: V/*v* with the <*u*T +val> (since the matrix verb is finite), and matrix subject DP_{matr} with the instance of <*u*T -val>. Recall that V in subjunctive constructions selects a CP headed by *čtoby*. This selectional property would result in the featural complex, which by that moment in the derivation is present on *čtoby,* to move and adjoin to the matrix V. By the time the *v*P of the matrix clause is completed, the featural bundle raised from the head of embedded CP and adjoined to the V, and further to *v*, still does not have a value for its T-feature. The configuration at this stage of the derivation is given in (21)[3]. Notice that here the featural complex in the head of *v*P position has two different types of T-features: one marked with [1], indicating that it came from the embedded clause, and all other instances which by that moment did not enter the Feature sharing version of the Agree relationship.

(21) $[_{vP}\ DP_{matr<uT\ -val>}\ v+V_{<uT\ +val>}+\mathbf{C_{<uT\ -val>[1]}+T_{<iT\ -val>[1]}+FF(emb.\ subj.)}\ \ldots\ [_{CP}$ čtoby...

At the next stage, the matrix T, endowed with <*i*T -val> feature, is merged into the structure. Since it is an interpretable feature, it probes down, finding the T-feature of the matrix subject and Agrees with it, resulting in a shared feature between it and the matrix subject DP_{matr}. As before, the formal feature bundle of the matrix subject adjoins to T. Further, since the T-feature of the matrix T is still unvalued (as none of the elements with which it has agreed have provided it with a value), it probes down one more time and finds the matrix *v*+V+C+T+FF(emb. subj.) complex as a goal. The Agree operation at this stage makes all the T-features on the matrix and embedded Vs, and the T-features in the featural complex located in the matrix *v*-head position instances of the same feature, and values them, acquiring the value from the <*u*T +val> matrix verb.

After this crucial step, all T-features introduced so far in both matrix and embedded clauses are instances of the same T-feature, and all of them become valued. The resulting structure is shown in (22). As before, the bolded features are the features, which were raised from the embedded clause:

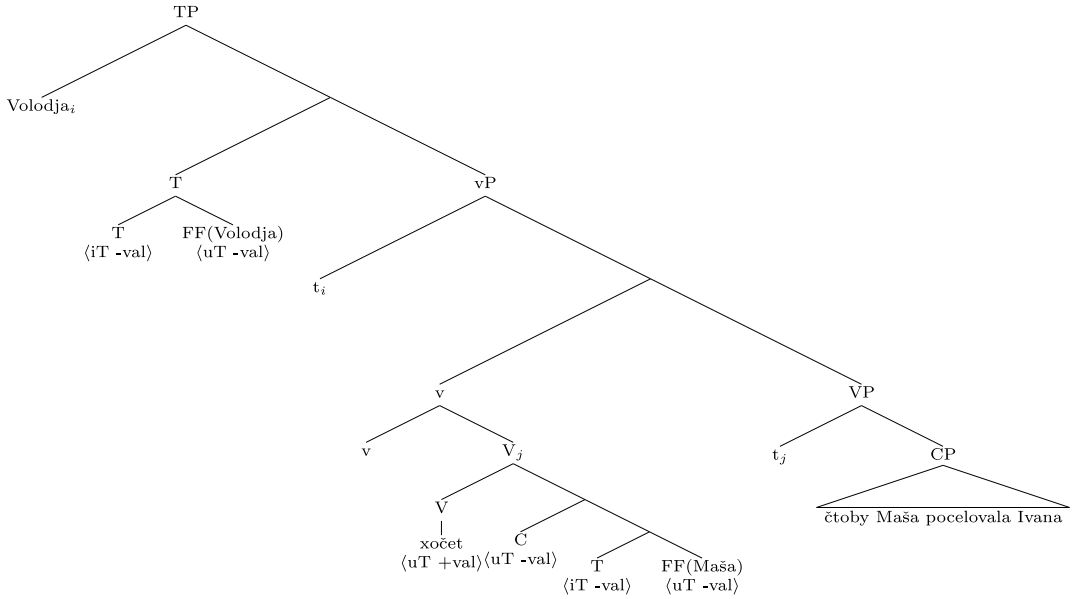
(22) $[_{TP}\ T_{<iT\ +val>[1]}+FF(matr.\ subj.)\ [_{vP}\ DP_{matr<uT\ +val>[1]}$
$v+V_{<uT\ +val>[1]}+\mathbf{C_{<uT\ +val>[1]}+T_{<iT\ +val>[1]}+FF(emb.\ subj.)}\ \ldots\ [_{CP}$ čto by...

[3] I will not go into details of how and why *čtoby* gets pronounced in the lower clause, and why its phonological features do not raise along with the formal featural complex to the position in the matrix clause. For more details on this I refer the reader to Antonenko, to appear, where I propose that *čtoby* consists of two parts: *čto*, located in Spec,CP, and *by*, which is a complementizer C.

(23) presents an example of the sentence with the subjunctive embedded clause, and gives an example of the tree before the final valuation has taken place:

(23) a. Volodja xočet čtoby Maša pocelovala Ivana
V. wants that.subj M. kiss I.
'Volodja wants Mary to kiss Ivan'

b.



4.3 Russian obviation explained

I propose that the obviation constitutes a violation of Principle B. As I mentioned earlier in my consideration of Move-F, the featural bundle of the nominal is indistinguishable from the nominal itself from the point of view of the computational system, and therefore the formal feature complex can enter into binding relations (Watanabe 2000, Branigan 2000; cf. Saito 2005, 2003 where he proposes that the <Arg> feature of nominals participates in binding relations). In my view here, Principle B is violated if the bundle of formal features FF of the pronominal element is locally bound by its antecedent or the set of formal features of its antecedent.

This analysis of the indicative embedded clauses allows an account of the lack of obviation facts in indicative sentences from examples (5b) and (6b) in section 2, repeated here in (24):

(24) a. Volodja$_i$ skazal čto on$_{i/j}$ poceloval Nadju
V. said that he kissed N.
'Volodja$_i$ said that he$_{i/j}$ kissed Nadja.'

b. Volodja$_i$ skazal čto Nadja pocelovala ego$_{i/j}$
V. said that N. kissed him
'Volodja$_i$ said that Nadja kissed him$_{i/j}$.'

In (24a) the embedded subject is in the T-domain, and therefore cannot be bound by *Volodja*, since the matrix subject cannot see inside the lower CP-phase. A similar situation can be observed in (24b): the embedded object is located low inside the embedded CP-phase and therefore cannot be bound by the matrix subject. Therefore, no violation of Principle B arises, and both examples are grammatical.

Now I will consider the obviation phenomenon in the case of subjunctive embedded clauses. The relevant examples are repeated in (25):

(25) a. *Volodja$_i$ xočet čtoby on$_i$ poceloval Nadju
V. wants that.subj he kissed N.
'Volodja wants that he kiss Nadja'

b. Volodja$_i$ xočet čtoby Nadja pocelovala ego$_{i/j}$
V. said that.subj N. kissed him
'Volodja$_i$ wants Nadja to kiss him$_{i/j}$.'

In example (25a), by the time the matrix *v*P phase is completed the configuration is the following (following the analysis proposed in the previous section):

(26) [$_{vP}$ Volodja$_i$ *v*+V+...+FF(he$_i$) [$_{CP}$ ... [$_{TP}$ he ...

The formal features of the embedded pronominal subject end up adjoined to the matrix *v*+V complex, which is c-commanded by the matrix subject. The Principle B is violated at this configuration, and it will remain violated even as *Volodja* moves to the Spec,TP, rendering the sentence ungrammatical:

(27) [$_{TP}$ Volodja$_i$ [$_{vP}$ t *v*+V+...+FF(he$_i$) [$_{CP\ ...}$ [$_{TP}$ he ...

The sentence (25b) is however grammatical. The embedded *v*P-phase, where the pronominal object is located, is closed by the time the matrix *v*P is completed, and also there is no movement of the formal features of the embedded object to the matrix clause. Therefore, the violation of Principle B does not occur, and the sentence is grammatical.

Now consider a situation in which the embedded clause has a dative subject (Bailyn 2004). The relevant example is given in (28). Observe that in this case there are no obviation effects:

(28) Volodja$_i$ xočet čtoby emu$_i$ bylo xorošo
V. wants that.subj he.dat be good
'Volodja wants to feel good'

Following the proposal of Pesetsky and Torrego 2001, the T-feature on D is realized as nominative case. It is this fact that accounts for the raising of embedded nominative subjects formal features to the embedded T, and subsequent raising of T+FF(emb. subj.) complex first to the embedded C, and later to the matrix *v*+V complex to check features with the matrix T. However, in the absence of nominative case, no such raising is possible because of the lack of T-feature on the dative subject. Therefore, when the subject of the embedded clause is dative, its features do not adjoin to the embedded T, and thus there is no raising of its features from the embedded clause into the matrix clause. That results in the FF of dative subjects staying within the embedded TP, and therefore Principle B is not violated in sentences with embedded dative subjects. This explains the grammaticality of sentences like (28), and thus the observed absence of obviation effects is accounted for.

5 Subjunctives in Serbo-Croatian

5.1 Status of the subjects of subjunctives

The embedded subject of SC volitional subjunctives can be argued to be PRO rather than *pro*. The arguments given in (29) – (32) (from Miskelijn 2006) demonstrate the differences between the overt and phonologically null subject in the case of volitional subjunctives.

(29) *Availability of sloppy reading under ellipsis (cf. English control clauses):*

a. Marija hoće da kupi klavir i Jelena također.
M. wants that.subj buy piano and J. too
'Marija wants to buy the piano and Jelena too.'

b. Mary wants to buy the piano, and Helen too
(*Helen wants to buy the piano, not Helen wants Mary to buy the piano*)

Consider (29). The emergence of sloppy reading under ellipsis is predicted only if the embedded subject is PRO. The Serbo-Croatian example can be compared with the similar English control example, which uncontroversially involves a PRO subject.

(30) *NPI-licensing is blocked by a nominative argument:*

a. Ne želim da e vidim nikoga.
NEG want that.subj see noone
'I don't want to see anyone.'

b. * Ne želim da Marija vidi nikoga.
'I don't want Marija to see anyone'

Example (30b) shows that the presence of the nominative marked argument blocks the NPI licensing in the embedded clause. If the embedded null-subject of the subjunctive were *pro*, we would expect to find similar effects in (30a); however the sentence is perfectly grammatical.

(31) *Blocking of topic-preposing by a case-marked element:*

a. To ne želim da e uradim.
that NEG want that.subj do
'That, I don't want to do.'

b. ?*To ne želim da Marija uradi.
that NEG want that.subj M. do
'That, I don't want Marija to do.'

Similarly, in (31b), the (nominative) case marked element blocks the topic-preposing. However, in Type II subjunctives when the subject is null, the topic-preposing is grammatical. That confirms the hypothesis that the null-subject of embedded type II subjunctives is not case-marked, and therefore PRO.

(32) *Extraction:*

a. *Ko Marko želi [da t poljubi Mariju]? [Subjunctive]
who M. want that.subj kiss M.
'Who does Marko want to kiss Marija?'

b. ?Ko Marko misli [da t je poljubio Mariju]? [Indicative]
who M. think that aux kissed M.
'Who does Marko think kissed Marija?'

c. Za koga Marko želi [da t poljubi Mariju]? [Subjunctive]

In (32a), nominative *wh*-phrase *ko* is extracted from the subject of Type II subjunctive. Notice, that the extraction of the subject of the indicative clause leads to grammatical (32b). Therefore, the contrast between (32a) and (32b) would be surprising if the subjects of the Type II subjunctive were marked with nominative case. However, under the assumption that PRO is the subject of the embedded clause in (32a), its ungrammaticality can be accounted for since the *wh*-phrase *ko* does not get a nominative case. Notice that in (32c), *koga* gets its case from the preposition *za*, and therefore the sentence is grammatical.

I will take the evidence mentioned above to be sufficient to claim that the phonologically empty subject of the volitional subjunctives in Serbo-Croatian is PRO rather then *pro*. In the next section I demonstrate why there are no obviation effects with PRO.

5.2 Absence of obviation effects

As I mentioned earlier, obviation effects are absent in Serbo-Croatian if the subject is phonologically empty (33a), and present (similar to Russian) if it is pronominal (33b) (repeated from (9)):

(33) *Obviation effects in Serbo-Croatian:*

a. (On_i) hoće da $e_{i/*j}$ ode.
(he) wants that.subj leave
'He wants to leave'

b. (On_i) hoće da $on_{*i/j}$ ode.
(he) wants that.subj he leave
'He wants to leave'

Under my account of obviation in Russian, this difference receives a straightforward explanation. As argued in section 5.1 the null-subject in the example (33a) is PRO, and therefore lacks a nominative case. Under Pesetsky and Torrego's approach, only nominative case is a T-feature on D[4], and therefore PRO, which either lacks case all together or has a special null-case, does not participate in tense sharing. Thus, the formal features of the embedded subject do not raise to the matrix clause, and therefore the violation of Principle B will not occur. Therefore, the lack of obviation effects with the Type II subjunctives when the subject is null is predicted. This situation is reminiscent of the lack of obviation with dative subjects in Russian. The presence of obviation effects with the overt subjects in SC, as demonstrated in (33b) can be explained in the same way as Russian subject obviation.

This is another argument showing that obviation is a case-based phenomenon, and that only nominative marked pronominal subjects (which according to Pesetsky and Torrego 2001 are endowed with <*u*T -val> feature) in the embedded clause cannot be coreferential with the matrix subject.

6 Conclusion

In this paper I explored the structure of subjunctive clauses in Russian and Serbo-Croatian, and argued that subjunctive verbs, despite carrying tense morphology, have an unvalued T-feature. I explored a featural approach to binding, showing that feature displacement not accompanied by pied-piping of phonological material can alter binding relations. These assumptions allowed me to reduce subject obviation to a violation of Principle B on a featural level. Further, I demonstrated that subject obviation is a case-based phenomenon, and that only nominative embedded subjects are affected. Therefore, dative subjects in Russian and PRO subjects in Serbo-Croatian embedded subjunctive clauses are not affected, and can be coreferential with the matrix subjects.

A similar approach to subject obviation can be used to capture a number of differences in the behavior of the subjects of subjunctive clauses in a wide range of languages, such as Spanish, French, Italian and Catalan, which exhibit obviation, and Romanian, Modern Greek and Bulgarian, where subject obviation is absent in certain types of subjunctives. I leave these tasks for future research.

References

Antonenko, Andrei. To appear. Russian Subjunctive Puzzles, *Proceedings of the 33rd Annual Penn Linguistics Colloquium*.

Avrutin, Sergey, and Maria Babyonyshev. 1997. Obviation in Subjunctive Clauses and AGR: Evidence from Russian. *Natural Language and Linguistic Theory* 15:229-262.

Bailyn, John Frederick. 2004. Generalized Inversion. *Natural Language and Linguistic Theory* 22:1-49.

Branigan, Philip. 2000. Binding Effects with Covert Movement. *Linguistic Inquiry* 31:553-557.

Brody, Michael. 1997. Perfect Chains. In *Elements of grammar*, ed. Liliane M. V. Haegeman. Dordrecht, The Netherlands: Kluwer Academic Publishers.

Chomsky, Noam. 1981. *Lectures on Government and Binding*, Foris, Dordrecht.

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

[4] In Pesetsky & Torrego 2004, the accusative case is also considered to be related to T, however that T is different from the sentential T. The accusative marked nominal's tense feature is checked within the *v*P projection, and therefore does not participate in Tense-sharing between the embedded and matrix clause.

Chomsky, Noam. 1998. Some observations on economy in generative grammar. In *Is the best good enough*, ed. P. Barbosa et al., 115–127. Cambridge, Mass.: MIT Press.
Chomsky, Noam. 2000. Minimalist inquiries. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. R. Martin, D. Michaels & J. Uriagereka. Cambridge, Mass.: MIT Press.
Chomsky, Noam. 2001. Derivation by Phase. In *Ken Hale: A life in language*, ed. Michael J. Kenstowicz, 1-52. Cambridge, Mass.: MIT Press.
Farkas, Donka. 1992. On Obviation. In *Lexical Matters*, ed. Ivan A. Sag and Anna Szabocsi, 85-109. Stanford University.
Hestvik, Arild. 1992. LF Movement of Pronouns and Antisubject Orientation. *Linguistic Inquiry* 23: 557-594.
Hornstein, Norbert. 2007. Pronouns in Minimalist Setting. In *The Copy Theory of Movement*, ed. Norbert Corver and Jairo Nunes, 351-384.
Miskelijn, Ivana. 2006. *Infinitivals in English and Serbian*. MA thesis, University of Novi Sad, Serbia.
Pesetsky, David, and Esther Torrego. 2001. T-to-C Movement: Causes and Consequences. In *Ken Hale: A life in language*, ed. Michael J. Kenstowicz, 355-426. Cambridge, Mass: MIT Press.
Pesetsky, David, and Esther Torrego. 2004. Tense, case, and the nature of syntactic categories. In *The syntax of time*, eds. Jacqueline Gueron and Jacqueline Lecarme. Cambridge, Mass.: MIT Press.
Pesetsky, David and Esther Torrego. 2007. The Syntax of Valuation and the Interpretability of Features. In *Phrasal and Clausal Architecture*, ed. Simin Karimi, Vida Samiian and Wendy K. Wilkins, pp. 262-294. John Benjamins.
Picallo, M. Carme. 1985. Opaque Domains. Ph.D. thesis, CUNY Graduate Center.
Saito, Mamoru. 2003. A Derivational Approach to the Interpretation of Scrambling Chains. *Lingua* 113:481-518.
Saito, Mamoru. 2005. Further Notes on the Interpretation of Scrambling Chains. In *The free word order phenomenon: Its syntactic sources and diversity*, ed. Joachim Sabel and Mamoru Saito, 335-376. Berlin: Mouton de Gruyter.
Tomić, Olga M. 2006. *Balkan sprachbund morpho-syntactic features*. Springer Netherlands.
Watanabe, Akira. 2000. Feature copying and Binding: Evidence from Complementizer Agreement and Switch Reference. *Syntax* 3:159-181.
Zwart, C. J-W. 1997. *Morphosyntax of Verb-movement*. Dordrecht: Kluwer.

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Go get, come see

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This paper discusses the morphology and syntax of the *go get* construction of North American English, in which the motion verbs *go* and *come* can be immediately followed by another verb, as in *I want to go get a coffee*. This construction is subject to a strict restriction to morphologically 'bare' inflection. This restriction is the subject of the first half of the paper, which argues that the restriction, mysterious from a syntactic perspective, is straightforward when understood as a purely morphological property. This morphology must be dependent, however, on a syntax for verbal inflection that allows multiple inflectional features to coexist on a single verb. A syntactic theory with this property is developed based on Matushansky's (2008) approach to predicative Case. The second half of the paper discusses the syntax of the construction, showing that both verbs are main lexical verbs.

1 Introduction

In North American English, the motion verbs *go* and *come* can be immediately followed by a second verb, without either coordination or subordination overtly marked. This construction is exemplified in (1):

(1) a. **Go jump** in a lake!
b. I asked her to **come visit** us next week.
c. Every morning, I **go get** a coffee.

This construction has not been widely discussed in the literature, and has received many different names, most of them presupposing some particular analysis. To avoid adding another name to this collection, I adopt Pullum (1990)'s pretheoretic label, saying that sentences like (1) exemplify the *go get* construction.

The construction was first addressed (at least within the generative literature) by Zwicky (1969), followed by Shopen (1971) and Carden and Pesetsky (1977). This early work provided detailed descriptions of the most peculiar property of the construction: a morphological restriction to environments calling for a 'bare' or uninflected verb. Thus, while the imperative, infinitive, and simple present examples in (1a-c) are acceptable, most speakers reject this construction in examples like (2a-c), with overtly inflected verbs:

(2) a. *I went jumped in the lake.
b. *She's coming seeing us next week.
c. *Every morning he goes gets a coffee.

Of particular interest is the contrast between (1c) and (2c): both are in the simple present tense, but only the zero-inflected (1c) is grammatical.

No fully satisfactory account of this morphological restriction has appeared in the literature, in part because recent authors who have attempted to account for the morphological restriction (Jaeggli and Hyams, 1993; Pollock, 1994; Cardinaletti and Giusti, 2001) have either mischaracterized the morphological restriction, or have misidentified the motion verb as a functional or auxiliary verb, located somewhere above the main VP in the clausal architecture. Section two of this paper discusses the morphology of the *go get* construction, showing (among other things) that both verbs are subject to the same set of morphological restrictions.

Given this conclusion, a novel approach to the morphology of the *go get* construction is called for. Section three develops a theory of English verbal inflection that allows the facts of the *go get* construction

to be accommodated. This theory is based in part on Matushansky's (2008) approach to Case Theory, in which morphological case is the result of spelling out features that have been assigned by heads to their phrasal complements. These features percolate down throughout a phrase, and are potentially expressed on multiple terminals. Beyond allowing a satisfactory account of the *go get* construction, this model of verbal morphology accounts neatly for other cases in English where syncretism 'rescues' syntactic structures that are otherwise ill-formed.

Section three of the paper then returns to the syntax of the *go get* construction, reviewing arguments that both verbs in the *go get* construction are main lexical verbs. This suggests a possible analogy between the construction and serial verbs in other languages, though this possibility is not explored fully here.

2 Morphology of the *go get* construction

Zwicky (1969), Shopen (1971), and Carden and Pesetsky (1977) all separately observed that the *go get* construction is restricted to environments that call for a systematically *bare* or *non-finite* form of the English verb, as in (3).[1]

(3) a. *imperative:* Come visit us next week.
b. *subjunctive:* Her supervisor demanded that she go buy a replacement.
c. *to-infinitive:* I want to go take a nap.
d. *modal complement:* Birds will come play in your birdbath.

The truly striking point, also observed by all these authors, is that non-3rd-singular simple present environments also allow the construction, as in (4), while the 3rd-singular present form in (5a) (with final *-s*), however, does not, and neither does any other overtly inflected verb form (5b-d).[2]

(4) *non-3rd-sg present:* I/you/we/they go get the paper every morning.

(5) a. *present 3rd-sg:* *He/she goes gets the paper every morning.
(also *go gets / *goes get)
b. *past:* *The delivery person came left the package on the porch.
(also *came leave / *come left)
c. *perfect:* *He has gone bought the newspaper already.
(also *go bought / *gone buy)
d. *progressive:* *Susan is coming having lunch with us.
(also *come having / *coming have)

When Do-Support is independently triggered (by negation, subject-aux inversion, etc.) it uniformly 'rescues' the ungrammatical examples in (4) and (5). This, combined with the contrast between (4) and (5a), is evidence that the ungrammaticality of inflected verbs in the *go get* construction does not result from a semantic restriction, but is really a *surface* restriction on the morphological realization of the verb.[3]

(6) *Subect-Aux Inversion*
a. Does she go get a coffee every morning?
b. Did the delivery person come leave the package on the porch?
Negation
c. She doesn't go get a coffee *every* morning.

[1] All examples of *go get* in this paper involve the verbs *go* and *come*. Shopen (1971), Carden and Pesetsky (1977), and Pullum (1990) all report that some speakers find other basic verbs of motion acceptable in this construction, including *run*, *hurry*, and *sit*. I have not been able to replicate these judgments — younger NAE speakers seem to accept only *go* and *come* in the *go get* construction.

[2] Some English speakers are reported to accept some or all inflected forms in the *go get* construction. The results of a survey investigating the range of judgments found among native English speakers are reported in Pullum (1990). For the purposes of this paper, I discuss the range of judgments that have been reported by previous authors.

[3] As Do-support will not occur in the relevant perfect or progressive contexts, it can never improve (5c-d).

d. The delivery person didn't come leave the package on the porch.

The restriction of the *go get* construction to 'bare' morphological environments is called the *inflection condition* by Pullum (1990).[4] The inflection condition obscures the morphology of the second verb in these data; it is not clear whether the second verb in (4), for example, is a non-finite form subcategorized for by the first verb, or whether it too is inflected with (null) present tense morphology.

The behaviour of irregular verbs shows that the second verb in the *go get* construction must express the same morphological features expressed by the motion verb — what is called by Pullum the *identity condition*. This is shown below to be the case with the verb *be*, and with verbs with irregular past participles (irregular in having past participles homophonous to their bare forms).

(4) already showed that *go get* is in general possible in the present tense, when the subject does not require overt morphology on the main verb. The verb *be*, however, requires overt suppletive morphology for all person-number combinations in the present tense – no present tense form of *be* is homophonous to its non-finite form.

If *go* and *come* subcategorized for a bare verb, uninflected *be*, which is available for *go get* in the non-finite example (7), should also be possible in *go get* in the present tense in (8). The ungrammaticality of (8) shows that this is not the case – nonfinite *be* is unavailable as the second verb in a finite environment (Zwicky, 1969; Shopen, 1971):

(7) I told them to go be loud somewhere else, since I had work to do.

(8) a. I go *am/*be cheerful once a week at my grandmothers.
b. Every morning, we/you/they come *are/*be loud right outside my office door.

From this we can infer that the second verb, like *go* and *come*, is required *not only* to be 'bare', *but also* to be in the form that would be called for were *go* or *come* not present.

The same point can be made using data from irregular perfect. Recall from (5) that *go get* is ungrammatical following perfect *have*, at least with *go* (perfect participle *gone*). Carden and Pesetsky (1977) observed that *come*, unlike *go*, is one of the small set of verbs in English whose perfect participles are homophonous to their bare forms, and they observed that the *go get* construction is ungrammatical in the perfect even when the motion verb is *come* rather that *go*:

(9) a. *Alex has come knocked on my door three times. (also **come knock*)
b. *Jacob has come bought a paper every day this week. (also **come buy*)
c. *Helen has come visited her grandmother only twice. (also **come visit*)

Carden and Pesetsky (1977) and Pullum (1990) observe, however, that for many speakers these sentences improve when the second verb is *also* a verb whose perfect participle is exceptionally homophonous, as in (10):

(10) a. Tess has come hit the piñata three times.
b. Jacob has come shut the door.
c. Helen has come put the vase on the stand.

Again, this shows that the second verb in the *go get* construction is not simply a bare infinitive; this verb must obey both the inflection condition and the identity condition by being simultaneously homophonous to its bare form *and* in a form appropriate to the broader syntactic environment.

Indeed, the broader point illuminated by these data is that the morphological restriction on the *go get* construction really is morphological, rather than a morphological consequence of formal syntactic features.

[4] There are other verbal constructions in English that display a similar restriction to non-inflected forms, as Carden and Pesetsky (1977) and Pullum (1990) observe. These include *try and V*, as in *I always **try and help** out at a party* but **I **tried and helped** out last night*, and *be sure and V*, as in ***Be sure and file** your taxes on time* but **He **is sure and files** his taxes on time every year*.

Imagine an attempt to express the facts of *go get* in the perfect using just formal features within syntax. To do this, the structure would have to license (or at least be compatible with) features appropriate for the perfect participle, because of the grammaticality of sentences like those in (10). At the same time, however, the structure could not license such features, because of the *un*grammaticality of equivalent sentences with *gone* in place of *come*. Indeed, once a structure is compatible with the presence of past participle *come*, the same structure should be compatible with *any* following past participle. This incorrectly predicts the sentences in (9) to be grammatical.

What would be needed to express the identity condition within the syntax would be a formal syntactic feature that tracks whether a verb is morphologically bare, and which can be manipulated by syntactic properties. This feature, call it [bare], is a feature that the past participles of verbs like *hit* and *come* bear, while the past participles of most other English verbs don't. This feature [bare] doesn't explain anything; it merely restates the morphological observation while violating modularity.

The inflection condition makes more sense thought of as a restriction not on syntax, but on a post-syntactic morphological component, like the one proposed by Distributed Morphology (Halle and Marantz, 1993, 1994). The inflection condition, situated in morphology, can be cast as the result of conflicting feature specifications assigned to a verb in the course of the derivation; the conflict can only be resolved in cases where a verb is syncretic for the conflicting features.

If this is correct, then the inflection condition on *go get* tells us something about the organization of English verbal paradigms: for zero-inflected present simple verbs to pattern with all non-finite verbs in this construction, it must be the case that English speakers regard this similarity as systematic, and assign a single 'cell' of the verbal paradigm to both categories (a cell that does not include third-person-singular present forms). Similarly, for those speakers who accept the sentences in (10), the similarity between non-finite and past participle *come* must be represented as systematic. This point is made in Zwicky (1969); related points, not discussing the *go get* construction, are discussed in Pullum and Zwicky (1986).

Though the restriction is proposed to be enforced in the morphology, however, it is presumably the syntax that results in different features needing to be spelled out on two single verbs. Agree-based approaches to verbal inflection will not be able to deliver this result: to continue to use a *have*-perfect example like *Tess has come hit the piñata three times* as an example, once either a participle-requiring head or a bareness-requiring head has agreed with either verb, there should be no reason for that verb to bear a second set of inflectional features.

Section three develops a syntax of verbal inflection that can both get the *same* syntactic features onto more than one verb, and can also get more than one syntactic feature of the same type on a single verb.

2.1 Distinguishing the *go get* construction from similar constructions

At this point in the discussion it will be useful to distinguish the *go get* construction from two other constructions in English involving motion verbs: motion verbs followed by purpose infinitives (11a), and asymmetric coordination involving motion verbs (11b).

(11) a. I go to buy a coffee every morning.
b. I go and buy a coffee every morning.

The comparison between the *go get* construction and motion verbs followed by purpose infinitives is easily dispelled. Not only are motion verbs with purpose infinitives not subject to the morphological restrictions seen with *go get*, but they also have different truth conditions. To see this, consider the two sentences in (12) (from Shopen, 1971):

(12) a. Every Saturday I go to buy vegetables, but there are never any vegetables.
b. #Every Saturday I go buy vegetables, but there are never any vegetables.

(12a) is potentially true; I can go somewhere with the intention of buying vegetables even if I never actually succeed in doing so. (12b), by contrast, exhibits a contradition; to say that I *go buy* vegetables appears to

entail that I do actually *buy* vegetables.

The differences between *go get* and asymmetric coordination are more subtle. Indeed, both Zwicky (1969) and Carden and Pesetsky (1977) actually analyzed *go get* constructions as resulting from the rule of *Conjunction Reduction* (Lakoff and Peters, 1969) applying to VP-coordinated sentences.[5]

There are substantial empirical differences between the two constructions, however, first observed by Shopen (1971). First, VP-coordination with a motion verb in the first position is possible with overtly inflected verbs:[6]

(13) What have you gone and done this time?

(14) a. He/she goes and gets the paper every morning.
b. The delivery person came and left the package on the porch.
c. He has gone and bought the newspaper already.
d. Susan is coming and having lunch with us.

Second, the *go get* construction requires an *agentive* subject, while VP-coordinations do not (Shopen, 1971). We can see the agentivity requirement on the *go get* construction in the example in (15):[7]

(15) a. Will the army come destroy the city?
b. #Will the bomb come destroy the city?
c. Will the bomb come and destroy the city?

Third, the asymmetric coordination construction allows a verb particle or a locative PP to follow the motion verb, while *go get* doesn't:

(16) a. Would you go (*out) fetch the mail?
b. Would you go (out) and fetch the mail?

(17) a. What did you ask them to come (*to the office) pick up?
b. What did you ask them to come (to the office) and pick up?

In fact, in the *go get* construction there is no position in the clause in which a PP can appear and modify the motion verb. Both (18a) and (18b) are ungrammatical attempts to insert a directional PP modifying *go*; (18c) is grammatical, but the PP is of the type that could not independently occur with *go*, only with *buy*:

(18) a. *What did you go **to the store** buy?
b. *What did you go buy **to the store?**
c. What did you go buy **at the store**?

These multiple points of syntactic divergence provide compelling reason to abandon an analysis in which the *go get* construction derives from a coordination structure. It is necessary to review this, however, as the analysis of *go get* as a specialized form of asymmetric coordination is initially attractive, but distracts from other points of more theoretical interest.

3 Matushansky's Case Theory, features, and verbal inflection

As just mentioned, aside from an appropriate theory of syncretism and a post-syntactic morphological component, an analysis of the *go get* construction requires a mechanism for getting the same formal

[5] Cardinaletti and Giusti (2001); Wiklund (2005); De Vos (2004) also implicitly assume that the two constructions are related, though they do not provide arguments for this analysis.

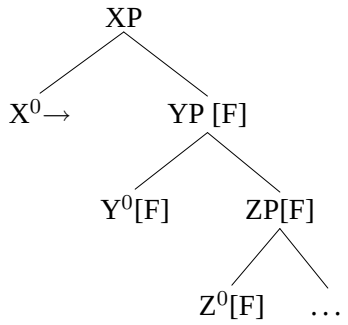
[6] Note that Carden and Pesetsky correctly observe that *try and V* and *be sure and V* constructions are impossible with overt inflection, and they claim that the Inflection condition *does* apply to coordinated VPs with *go* or *come* in the first conjunct. See Pullum (1990) for arguments specifically addressing their examples.

[7] Thanks to Patrick Grosz for suggesting this example.

features on more than one verb. This section develops such a mechanism, drawing on proposals made by Ora Matushansky in the domain of case.

Matushansky (2008) proposes a novel approach to Case Theory in the context of a discussion of predicative Case. While current approaches to abstract and morphological Case propose that it results from either the valuing of abstract Case features on nominals in the course of their ϕ-Agreement with some functional head, or else from Case-competition between multiple DPs within some domain, Matushansky proposes instead that the features that result in morphological case are assigned via local head-complement relationship, in which a head can assign features to its sister, features that are then inherited by all the daughters of that sister.

Thus, in the tree in (19), the head X^0 assigns the feature [F] to its complement, and this feature will percolate throughout the complement YP (unless its percolation is interrupted or blocked).



Matushansky uses this theory to describe the distribution of Predicative Case cross-linguistically, but the theory makes two independent and interesting predictions. First, it predicts *case spreading* phenomena, where the same morphological case is realized on multiple elements within a clause, even when they don't belong to a single DP constituent.[8] Second, it predicts *case stacking*: cases when more than one case morpheme occurs on a single constituent. Case stacking will occur, on this theory, whenever a head is in the domain of more than one case-feature-assigner and the language has fission of case features. [9]

Suppose that verbal inflection works the same way. That is, suppose that the dependencies of verbal inflection result from verbal heads assigning features to their complements which effect the eventual spell-out of lower verbs. It is straightforward to describe English verbal inflection in this framework. The resulting model of verbal morphology has many of the properties of Affix-Hopping; in particular, the derivational source of verbal inflection is always the next verb up, but is assigned downwards in the course of the derivation. The important difference, crucial to accounting for *go get*, is the possiblity of realizing the morphology determined by a head on *multiple* terminals within its complement.

For illustration of how this model will work in a simple case, consider the sentence in (19):

(19) a. Alex will have eaten the cake.

Assume that EAT is merged lacking any morphological or formal features. When HAVE is merged, it will assign morphological features to its complement — the features that result in the next verb down being realized as a past participle. For this reason, let us call the morphological feature assigned by HAVE [Participal]. This feature is initially assigned by HAVE to the VP headed by EAT. They are subsequently inherited by the daughters of that VP, importantly ending up on EAT itself.

When the modal WILL is merged, it will assign no features to its complement.[10]

When the resulting structure is spelled out, HAVE with no morphological features assigned to it will be spelled out as *have*, and EAT with the feature [Participle] will be spelled out as *eaten*.

[8] Case spreading is seen in the agreement of morphological case between subjects and predicates in Latin predicational constructions (Matushansky, 2008), and in the spreading of accusative throughout the VP in Lardil (Richards, 2009)

[9] Case stacking occurs in Lardil, where oblique-marked DPs can receive a second case suffix. (Richards, 2009)

[10] Equivalently, modals could assign a feature requiring spell out as an infinitive. For simplicity we will assume, however, that they simply assign no features.

In a more complex example, multiple heads will be assigning features downward:

(20) The cake will have been being eaten.

There is the question in this case whether the lowest verb EAT ends up with the features assigned by *all* higher heads, or whether it bears only the [Participle] feature assigned by passive BE.[11] To use this model to explain the inflection-stacking data, the latter answer must be true. If a verb can bear multiple morphological features, but choose to express only one of them, it should never be the case that a verb is only grammatical if it syncretically expresses all the features that have been assigned to it. Thus, feature-assinging heads must *block* the percolation of features through them.

3.1 Applying the model to the *go get* construction

This model of verbal inflection provides a way to account for both the inflection condition and the identity conditions observed for the *go get* construction. The identity condition will result from GO and COME not blocking the percolation of features from a higher head. Whatever features end up being assigned to one of these verbs will therefore percolate further down and also end up on the lower verb in the construction.

The inflection condition can be given an account if GO and COME, on their occurrence in this construction, are *tense tantum* verbs (Pesetsky and Torrego, 2001): they are merged always bearing a feature that, when assigned to a verb by a higher head, results in a 'bare' verb form after spell out. This feature can be called [Infinitive], though it could be any formal feature that is systematically realized by a morphologically bare verb.

In addition to entering the derivation *bearing* [Infinitive], these verbs must also assign this feature to their complement. This is exceptional behaviour — other verbs do not express the feature they assign to their complement.

As discussed earlier, we assume that a verbal terminal that bears multiple features must be able to realize those features with a *single* lexical item; that is, there must be cell in the paradigm of that root that spans all of those features.[12]

Consider how these assumptions relate to the derivation of the sentence in (21):

(21) Alex will have come hit the pinãta.

Because of its tense-tantum property, COME enters the derivation already bearing the morphological feature [Infinitive], and assigns this feature to its complement VP. HIT will therefore inherit this feature. When HAVE is merged, it will assign [Participle] to its complement VP. This feature will be inherited by the head of that VP COME. Because COME exceptionally *does not block* feature percolation into its complement, the feature [Participle] will also be assigned to HIT.

For most verbs in English, being assigned both [Infinitive] and [Participle] would result in an impossible spell out situation, as most verbs do not have a single form that can satisfy both these features. Due to coincidental properties of the paradigms of *come* and *hit*, however, the *can* nonetheless spell out these multiple features with single forms:

(22) a. COME[Infinitive] [Perfect] $\longrightarrow$ *come*
b. HIT[Infinitive] [Perfect] $\longrightarrow$ *hit*

Had the second verb in (21) been EAT instead of HIT, at the point of lexical insertion there would have been a crash, because there is no element in the paradigm of HIT that can spell out all the features it would have been assigned:

[11] I assume that passive *be* and perfect *have* assign the same morphological feature to their complements, as perfect and passive participles are uniformly homophonous in English.

[12] This point is made in connection with the *go get* construction in Zwicky (1969).

(23) a. COME[Infinitive] [Perfect] ⟶ *come*
b. EAT[Infinitive] [Perfect] ⟶ **???** ← **Crash**

Though this approach achieves the desired results for the *go get* construction, it does so at the cost of a fairly substantial revision not only of our model of verbal inflection, but also of the syntactic mechanisms by which formal features are distributed through a structure. If the only advantage gained were the analysis of a relatively obscure corner of English morphosyntax, this cost would be too high. To justify it, we should expect to find its predictions in other languages and other domains.

As mentioned in the discussion of Matushansky's original implementation regarding Case Theory, this approach makes particular predictions about the ways we should expect to find features distributed through derivations: it predicts both case spreading and case stacking. If this is also how verbal inflection works, we expect to find *verbal* spreading and stacking.

There are in fact many phenomena that look like *spreading* of verbal inflection. Serial verb constructions (SVCs) are known, in languages that express tense, aspect, or mood on individual verbs, to show the same morphology on all verbs in the SVC:[13]

(24) Koṇḍa (Steever, 1988, 71–73)

vā-n-a sū-n-ap
come-NONPAST-1PL.exc see-NONPAST-1PL.exc
'We will come and see'

(25) Lango (Noonan, 1992, 211–12)

ácwɛ́ álɔ́ rwót
1sg-fat-HAB 1sg-exceed-HAB king
'I am fatter than the kind' (lit. I-fat I-exceed king)

(26) Saramaccan (Byrne, 1990, 152)

a (bi) féfi dí wósu (bi) kabá
he TENSE paint the house TENSE finish
'He had painted the house already.'

While these data are difficult to interpret in the absence of a particular theory of SVCs, they nonetheless exhibit something that could be called inflectional spreading.

Another candidate for inflection spreading can be found in Marsalese (a southern Italian dialect). Marsalese has a construction that shares many properties of the *go get* construction (Cardinaletti and Giusti, 2001);[14] most significantly for the present point, both verbs in this construction are overtly inflected and bear the same inflection:

(27) Marsalese (Cardinaletti and Giusti, 2001)

a. Vaju a pigghiu u pani.
(I) go-1SG to fetch-1SG the bread
b. Vai a pigghi u pani.
(you) go-2SG to fetch-2SG the bread
c. Va a pigghia u pani.
((s)he) go-3SG to fetch-3SG the bread
d. Vannu a pigghianu u pani
(they) go-3PL to fetch-3PL the bread

[13] These examples are drawn from Aikhenvald and Dixon (2007), who cites the original sources.

[14] Like *go get*, the Marsalese construction morphologically restricted, in this case to environments that call for the 'default' stem for *go* and *come*. Several other languages, to my knowledge, have a construction like *go get* with some kind of morphological restriction: these languages include at least Greek, Modern Hebrew, and Russian. In Greek and Hebrew the construction restricted to morphologically imperative verbs; the Russian construction is subject to a more difficult to define morphological restriction.

e. Va pigghia u pani
go-IMP-2SG buy-IMP-2SG the bread

Finally, Lardil, an endangered non-Pama-Nyungan language from the Tangkic family of northern Australia (Richards, 2009), has spreading of future morphology throughout the VP; it appears on adjuncts and arguments as well as on the main verb:

(28) Ngada nguthunguthu-r warnawu-thur dulnhuka-r beerr-uru-r nyith-urur
I slowly-FUT cook-FUT month.fish-FUT ti-tree-INSTR-FUT fire-INSTR-FUT
"I will slowly cook the month fish on a fire of ti-tree wood"

There are not as many obvious examples of *stacking* of verbal inflection. One possible candidate for this phenomenon is agglutinative inflection, where a single verb carries separate morphology for tense, aspect, modality, and agreement; in cases where the verb appears to surface within the VP (but bearing all this morphology), feature percolation and stacking provides an alternative analysis to covert agreement and raising.

Another potential example can be found in English verbal agreement with coordinated subjects. Pullum and Zwicky (1986) observe that a verb that agrees with a coordinated subject must be able to agree with both coordinates simultaneously:

(29) a. Either they or I {*are/*am/*is} going to have to go.
b. Either you or they are going to have to go.
c. Either they or I sing better than he does.

Thus (29a) is ungrammatical, because there is no form of the verb *be* capable of agreeing with both *they* and *I*, while (29b) is grammatical because of the availability of syncretic *are*, and (29c) is grammatical because first-singular and third-plural subjects trigger identical (null) agreement with regular verbs like *sing*.

One way of viewing this result is that subject-verb agreement results from assignment of agreement features downward. With a coordinated subject, multiple agreement features end up 'stacked' on the main verb. Rather than being spelled out independently (which would result in true morphological stacking), both agreement features must be satisfied when the verb is spelled out. This will only be possible in cases where a single verb or affix is syncretic for the features in question. The nature of this restriction should seem reminiscent of the restriction already discussed for the *go get* construction.

3.2 Syntax of the *go get* construction

Though the morphology of the *go get* construction is more striking, its syntax is of equal interest. There have been two main approaches proposed in the literature. One line of thought has said that the motion verb is an ordinary main verb, located in a VP in the same position in a clause ordinarily occupied by the main verb (Zwicky, 1969; Carden and Pesetsky, 1977; Pullum, 1990). The other line of thought has said that the motion verb is located within the functional structure of the clause, as a kind of aspectual auxiliary (Shopen, 1971; Jaeggli and Hyams, 1993; Cardinaletti and Giusti, 2001).

Both of these approaches raise interesting syntactic problems. The problem for the latter theory lies in explaining how the motion verb is able to lack any of the properties usually associated with auxiliary verbs in English. The problem for the former theory is that it leads to the conclusion that the *go get* construction is very similar to a SVC — yet the construction has been present in English for some time without apparently leading to the introduction of a more general serializing strategy.

This half of the paper reviews the evidence that both verbs involved in the *go get* construction are main lexical verbs.

3.3 The motion verb is not an auxiliary

(Shopen, 1971; Jaeggli and Hyams, 1993; Cardinaletti and Giusti, 2001) all argue that *go* and *come*

are auxiliary verbs located within the functional structure of the clause, as quasi-modals, aspectual auxiliaries, and unspecified functional heads, respectively. The attraction of this approach has been that it avoids proposing multiple main verbs in a single clause — its main challenge lies in accounting for the many ways that *go* and *come* do not behave like auxiliaries.

The argument that *go* and *come* are auxiliaries has not been advanced on the basis on strong empirical evidence, but rather on conceptual grounds, and on the holistic success it allows for a theory of the *go get* construction. In this section I review the evidence *against* this position, concluding that it leaves no room to analyze *go* and *come* as anything other than main verbs. This result is not novel (it is the conclusion of Zwicky 1969; Carden and Pesetsky 1977, and more recently Pullum 1990), but it seems worth discussing, as it is the more recent papers on the *go get* construction that have reached the opposite conclusion.

The main positional properties of English auxiliaries involve their position in T (or Aux, Emonds 1978), which they occupy by virtue of movement or raising. This is used to explain the fact, illustrated in (30) for the auxiliaries *have* and *be*, that English auxiliaries precede negation, invert in questions, and can be stranded by VP-Ellipsis.

(30) a. Alex isn't reading the book.
b. Has Alex read the book yet?
c. The book has been written, and the article will be.

Unlike auxiliaries, English main verbs require Do-support in these environments, as does the motion verb in the *go get* construction:

(31) a. Alex didn't read the book.
b. Did Alex read the book?
c. Sue will read the book, but Alex already did.

(32) a. Alex didn't go read the book.
b. Did Alex go read the book?
c. Sue will go read the book, but Alex already did.

It is not difficult to imagine, however, that *go* and *come* could be syntactic auxiliaries while lacking whatever property or feature triggers other auxiliaries to raise overtly to T. Subtler positional tests, however, indicate that *go* and *come* are located in essentially the same position as main verbs are, lower than the position occupied by non-raised auxiliary verbs (auxiliaries that occur after a modal or another auxiliary).

First of all, there is the position of the motion verb with respect to sentence level adverbs (Jackendoff, 1972) and floated quantifiers (Kitagawa, 1986; Sportiche, 1988). In (33) and (34) we can see that the motion verb *follows* both sentence-level adverbs (*seldom*, *always*, and *never*) and floated quantifiers:

(33) a. I (always) go (*always) buy a coffee in the afternoon.
b. You (seldom) come (*seldom) see me in the afternoon.
c. They (never) go (*never) listen to live music.

(34) They will (all) go (*all) buy ice cream.

By contrast, even non-raised auxiliaries may optionally precede the same elements:

(35) a. Ceremonial guards must (always) be (always) standing.
b. I would (seldom) have (seldom) seen you in the afternoon.
c. They (?never) have (never) travelled to Euroupe.

(36) a. They will (all) have) (all) bought ice cream.
b. They will (all) be (?all) given ice cream.

In particular, note that even non-raised passive *be* is better preceding sentence level adverbs than *go* or *come*. This is significant because passive *be* is the lowest of the (canonical) auxiliary verbs:

(37) a. Luggage must (always) be (?always) searched at security.
b. Cake has (seldom) been (?seldom) served at these events.
c. I promised to (never) be (?never) found without my identificaiton.

Even though the post-*be* positions of these adverbs are somewhat marginal, they are better than the sentences in (33) with the same adverbs after *go* and *come*

Much the same point can be made using VP-level adverbs (Jackendoff, 1972), which *go* and *come* can either precede or follow:[15]

(38) a. I asked Alex to (quickly) come (quickly) check on the cake.
b. I will (carefully) go (carefully) read the article you suggested.

The position of the adverbs in these examples results in different interpretations: when the adverb precedes *go* or *come* it is the going or coming that must be quick or careful; when the adverb follows the motion verb, it is the checking or the reading that must be quick or careful.

By contrast, non-raised auxiliaries either must precede VP-level adverbs, or at least they prefer to precede such adverbs (in the case of passive *be*):

(39) a. (While we've been waiting) Alex has (*quickly) been (quickly) checking on the cake.
b. The article has (?carefully) been (carefully) looked over.

Even when *be* is to the right of the adverb, however, there is no ambiguity parallel to the one in (38): when *carefully* precedes passive *be* in (39b), it is still the looking-over that is careful.

The conclusion we can draw from all these facts is that if *go* and *come* are auxiliaries, they occupy a functional projection lower than that of any other auxiliary. This is not *incompatible* with their being auxiliary verbs, but so far they look more like main verbs than like auxiliaries.

3.3.1 *Go* and *come* are main verbs

The positional evidence already reviewed has led to the conclusion that even if *go* and *come* are auxiliaries rather than main verbs, their base position is lower than any other auxiliary verb, in particular the passive auxiliary *be*.

Now we turn to data that suggest that if *go* and *come* are auxiliaries in a clause with a single verb phrase, they actually occur *above* the base position of the passive auxiliary. If *go* and *come* are main verbs that take another verb as their complement, however, this contradiction can be avoided.

(40) shows that passivization of *go get* sentences can't occur above the motion verb, even controlling for the morphological restriction by using only verbs with 'bare' past participles:

(40) a. *The piñata was come hit.
b. *Alex was come hurt.
c. *The vegetables were come cut.
d. *The cat was come let out.

The ungrammaticality of the sentences in (40) cannot be attributed to the unaccusativity of *come*: first, if *come* occurs in these sentences as a kind of quasi-aspectual auxiliary, its argument structure as a main verb is not expected to be relevant. Second, it is not the case the passivization is totally impossible with the *go get* construction; the passive auxiliary to occur as the second verb in the *go get* construction, though here the passive subject of the sentence remains subject to the agentivity requirement of *go get*:

(41) a. Let's go be arrested by the police at that demonstration. (Jaeggli and Hyams, 1993)
b. The doctor demanded that Alex come be examined.

[15] It has previously been reported that adverbs cannot intervene between the two verbs in the *go get* construction. (38) shows that this is not the case.

If *go* and *come* are auxiliaries, then the sentences in (40) and (41) represent single clauses with multiple auxiliaries. In this case, the most natural account for the contrast between (40) and (41) is to say that *go* and *come* occur *higher* in the clause than the passive auxiliary. We saw in the last section, however, that the other main tests for location within an English clause suggest that *go* and *come* are located *lower* than passive *be*. This contradiction is a serious problem for an auxiliary-based analysis of the *go get* construction.

It is difficult to see how to rescue the auxiliary analysis of *go* and *come* in the face of the passive facts above. If *go* and *come* were regular auxiliaries located lower than passive *be*, we could explain the data in (40), but would be left without an explanation for (41), unless *go* and *come* are auxiliaries that can embed a lower clause.

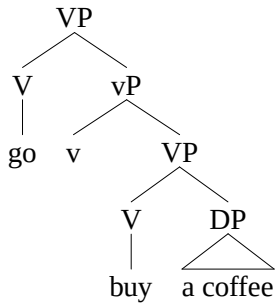
If we assume that *go* and *come* are main verbs, the data are much more manageable. The failure of passivization in (40) can be attributed to the fact that *go* and *come* are intransitive (unaccusative) verbs to which passivization ordinarily cannot apply in English.

If *go* and *come* are main verbs, then the contrasting grammaticality of (41) must be due to facts about the constituent to which the second verb in the *go get* construction belongs. whatever this construction is, we now know that it must be at least large enough to contain a passive auxiliary.

The complement of the motion verb cannot be very big; it contains no overt subject, and cannot contain sentence-level adverbs. As we've seen, however, it can include enough functional structure to support passive *be*. Furthermore, the lower verb in this construction is able to theta-mark the subject.

In recent work, the syntax associated with subjects – their agentivity, as well as their disappearance in passive – is often associated with the single proposed projection vP (Chomsky, 1995). It is plausible to suggest, therefore, that the complement of the motion verb in the *go get* construction is vP, as shown in (42):

(42) The student will [$_{VP}$ go [$_{vP}$ v^0 [$_{VP}$ buy [$_{DP}$ a coffee]]]].



If the complement of the motion verb shows (some of the) the syntactic and semantic behaviour of a constituent with a subject — theta marking of that subject and passivization — there is the question of what the status of that subject is. There are essentially two possibilities: the surface subject could be *shared* between the two verbs via raising (in which case it would receive two theta roles in the course of the derivation, in violation of the theta-criterion (Chomsky, 1981)), or the subject of the lower vP could be PRO, controlled by the higher subject (in which case there is a question of how PRO is licensed in this environment). There is not room in this paper to discuss these options fully.

Another option for the structure of the two verbs in the *go get* construction is suggested by Pullum (1990), who proposes that the two verbs co-head a single VP, in something like a serial verb construction. One benefit of this analysis is that it captures the close syntactic relationship between the two verbs very neatly – very little can intervene, because there is very little *space* for anything to intervene.

There is some difficulty for the SVC analysis given the possibility of passive *be* as the second verb in *go get*; given the argument-sharing properties of serial verb constructions (Baker, 1989), we should expect that functional elements can't participate in SVCs. Passive *be*, as a functional element, lacks any argument structure to share with the motion verb. It's therefore not clear that it could be involved in a SVC-like structure. The parallel between the *go get* construction and serialization is obvious, however, particularly as motion verbs are cross-linguistically likely to be serializing verbs (Aikhenvald and Dixon, 2007).

4 Conclusion

This paper has argued for particular approaches to the morphology and syntax of the *go get* construction in English.

The morphological theory advanced, based on Matushansky's (2008) approach to predicative Case, involves considerable changes to the way features are manipulated by the syntax. In the model of verbal inflection proposed here, features are assigned by verbs to their complements, and then percolate downwards throughout the complement unless they encounter a blocker. These features are potentially realized on every terminal within the domain through which they percolate.

In addition to accounting for both the inflection and identity conditions on the *go get* construction, this theory makes broad predictions about the kind of phenomena we expect to see in verbal morphology cross linguistically. It makes the prediction that we should see feature spreading, where a single feature is realized on multiple words within some domain, and feature stacking, where multiple features are realized on a single head. The morphological restrictions on *go get* can be seen as instantiating *both* these properties, but several other candidates for feature spreading were discussed. Development of this framework requires further attention to these predictions, particularly feature stacking, for which no concrete independent examples were advanced.

In the syntactic analysis, the paper diverged from several recent papers that have argued that the motion verbs *go* and *come* are functional/auxiliary elements. I attempted to show, using primarily positional evidence, that the motion verb occurs in the same position as main lexical verbs do in English, lower than the non-raised positions of auxiliary verbs. I concluded that *go* and *come* are main verbs in English. Though not entirely novel, this conclusion points in several directions for further research, addressing the question of why the verbs *go* and *come* can function as syntactic subordinators in this highly restricted context. The further question of whether this is in fact a corner of serialization in English syntax (otherwise a non-serializing language) has promise to eventually shed light on the parameterization of serialization more generally.

References

Aikhenvald, Alexandra Y., and R. M. W. Dixon, ed. 2007. *Serial verb constructions: a cross-linguistic typology*. Oxford University Press.

Baker, Mark. 1989. Object sharing and projection in serial verb constructions. *Linguistic Inquiry* 20:513–543.

Byrne, Francis. 1990. Grammatical relations in a radical creole: Verb complementation in Saramaccan. .

Carden, Guy, and David Pesetsky. 1977. Double-verb constructions, markedness, and a fake co-ordination. In *Papers from the thirteenth regional meeting of the Chicago Linguistics Society*, volume 13, 82–92. Chicago, Illinois.

Cardinaletti, Anna, and Giuliana Giusti. 2001. "Semi-lexical" motion verbs in Romance and Germanic. In *Semi-lexical categories: The funtion of content words and the content of function words*, ed. Norbert Corver and Henk C van Riemsdijk, 371–414. Walter de Gruyter.

Chomsky, Noam. 1981. *Lectures on Government and Binding: The Pisa Lectures*. Foris Publications.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.

De Vos, Mark. 2004. Pseudo-coordination is not subordination. *Linguistics in the Netherlands* 21:181–192.

Emonds, Joseph E. 1978. The verbal complex V'-V in french. *Linguistic Inquiry* 21:49–77.

Halle, Morris, and Alec Marantz. 1993. Distributed Morphology and the pieces of inflection. In *The View from Building 20: Essays in Linguistics in Honor of Sylvain Bromberger*, ed. Ken Hale and Samuel J. Keyser. Cambridge, MA: MIT Press.

Halle, Morris, and Alec Marantz. 1994. Some key features of Distributed Morphology. *MIT Working Papers in Linguistics* 21:275–288.

Jackendoff, Ray S. 1972. *Semantic Interpretation in Generative Grammar.*. Cambridge, MA: MIT Press.

Jaeggli, Osvaldo, and Nina M. Hyams. 1993. On the independence and interdependence of syntactic and

morphological properties: English Aspectual *come* and *go*. *Natural Language & Linguistic Theory* 11:313–346.

Kitagawa, Yoshihisa. 1986. Subjects in Japanese and English. Doctoral Dissertation, University of Massachusetts at Amherst.

Lakoff, George, and Stanley Peters. 1969. Phrasal conjunction and symmetric predicates. *Modern studies in English: Readings in transformational grammar* 113–142.

Matushansky, Ora. 2008. A case study of predication. In *Contributions from Formal Description of Slavic Languages*, ed. F. Marušič and R. Žaucer, volume 6.5 of *Studies in Formal Slavic Linguistics.*, 213–239. Frankfurt am Main: Peter Lang.

Noonan, Michael P. 1992. *A grammar of Lango*. Walter de Gruyter.

Pesetsky, David. 2007. Russian case morphology and syntactic categories. Invited talk, Leipzig-Harvard Workshop on Morphology and Argument Encoding.

Pesetsky, David, and Esther Torrego. 2001. T-to-C movement: Causes and consequences. *Ken Hale: A life in language* 355–426.

Pollock, Jean-Yves. 1994. Checking theory and bare verbs. In *Paths towards universal grammar: Studies in honor of rickard s. kayne*, ed. Guglielmo Cinque, Jan Koster, Jean-Yves Pollock, Luigi Rizzi, and Raffaella Zanuttini, 293–310. Washington, D.C.: Georgetown University Press.

Pullum, Geoffrey K. 1990. Constraints on Intransitive Quasi-Serial Verb Constructions in Modern Colloquial English. *Ohio State Working Papers in Linguistics* 39:218–239.

Pullum, Geoffrey K., and Arnold M. Zwicky. 1986. Phonological resolution of syntactic feature conflict. *Language* 6:751–773.

Richards, Norvin. 2009. Lardil "case stacking" and the structural/inherent case distinction. Ms. MIT.

Shopen, Tim. 1971. Caught in the act: An intermediate stage in a would-be historical process providing syntactic evidence for the psychological reality of paradigms. In *Papers from the Seventh Regional Meeting of the Chicago Linguistic Society*, 254–63. Chicago Linguistic Society, Chicago, Illinois.

Sportiche, Dominique. 1988. A theory of floating quantifiers and its corollaries for constituent structure. *Linguistic inquiry* 19:425–449.

Steever, Sanford B. 1988. *The serial verb formation in the Dravidian languages*. Motilal Banarsidass Publishers.

Wiklund, Anna-Lena. 2005. *The Syntax of Tenselessness: On Copying Constructions in Swedish*. Umeå: Umeå University, Faculty of Arts, Philosophy and Linguistics.

Zwicky, Arnold M. 1969. Phonological constraints in syntactic descriptions. *Papers in Linguistics* 1:411–463.

Case asymmetry and information structure in Shona*

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Shona is often described as a symmetrical language, in which both the applied and direct objects behave syntactically as primary objects. This paper argues that Shona is in fact asymmetrical, because either the direct or applied object can behave as a primary object to check structural case, but not both. Evidence for this claim is taken from observed asymmetries between locative and other thematic categories of applied objects. It is argued that locative applied objects are assigned lexical case, leaving the direct object to check structural case, and that the other applied objects check structural case. The standard diagnostics of symmetry, namely passivization and object marking, are shown to relate to information structural notions, such as topic and focus, rather than case.

1 Introduction

Bantu languages are traditionally classified as either symmetrical or asymmetrical, depending on whether the applied and direct objects pattern together syntactically or not. Under the standard diagnostics, Shona (Zone "S", Zimbabwe) is described as a symmetrical language. However, in this paper, I argue that the apparent symmetry in Shona is not attributable to case, but rather information structural factors. More specifically, I demonstrate that Shona is a case-asymmetrical language; either the applied or the direct object can check structural case, but not both. Further, I will show that the standard diagnostics of symmetry are driven by topic and focus, rather than case.

This paper is structured as follows. In §2, I look at the classic diagnostics of Bantu symmetry, namely passivization and object marking, and show how Shona patterns like a symmetrical language under these diagnostics. In §3, I discuss how symmetry and asymmetry can be modelled in a Minimalist framework of case-checking, and in §4, I demonstrate that Shona is indeed asymmetric in this model. In §5, I turn to the diagnostics themselves, and show that, in Shona, passivization and object marking are information structural, rather than case-related. §6 concludes with some remarks on how this analysis of Shona may contribute to the typology of Bantu languages more generally.

2 Diagnosing symmetry in Shona

Before turning to a discussion of symmetry, a brief introduction to Shona applicatives is in order. As observed in (1), applicatives increase the valency of the verb by introducing an applied object (AO).[1]

(1) a. *Ndakabika* *manhanga.*
nd-aka-bik-a ma-nhanga
1-PST-cook-FV CL6-pumpkin
'I cooked pumpkins.'

* Sincere thanks to my consultant, Calisto Mudzingwa, for sharing his language with me. *Mazviita*! Thank you also to Dennis Storoshenko, Martina Wiltschko, Rose-Marie Déchaine, and audiences at ACAL 39 and NWLC 2009 for helpful feedback. All errors are my own.

[1] Unless otherwise cited, all data are from the author's fieldwork with a native speaker of the Karanga dialect. Abbreviations: 1-21 = noun classes 1-21; AGR(eement); APPL(icative); CAUS(ative); CL(ass); FV = final vowel; INF(initive); OBJ(ect); pass(ive); PST = past; SG = singular

b. *Ndakabik**ir**a* *Shingi* *manhanga.*
nd-aka-bik-**ir**-a S. ma-nhanga
1-PST-cook-**APPL**-FV S. CL6-pumpkin
'I cooked pumpkins for Shingi.'

In (1)a is a simple monotransitive sentence, and in (1)b, an applicative suffix *–ir* appears on the verb to introduce a benefactive applied object. Applied objects in Shona are typically benefactive, locative, or dative, although other thematic interpretations are possible with certain verbs as well.

Applicatives are a common feature of Bantu languages. Further, in the literature, Bantu languages are often divided into two types: those for which both applied and direct objects pattern syntactically as the primary object (symmetrical languages) and those for which only a single object, the closest one to the verb, patterns like a primary object (asymmetrical languages), Bresnan and Moshi (1990); Alsina and Mchombo (1993).

There are various criteria that researchers have used to motivate the symmetric/asymmetric distinction, but two of the main ones are passivization and object marking. In symmetrical languages, both the direct object and the applied object are able to passivize, whereas in asymmetrical languages, only the closest object to the verb can passivize. Additionally, in symmetrical languages, both the direct object and the applied object can be referenced by an object prefix on the verb, whereas in asymmetrical languages, only the closest object to the verb can be referenced with an object prefix.

According to these diagnostics, Shona is a symmetrical language. As observed in (2), both the direct object and the applied object can passivize.

(2) a. *Manhanga* *akabikwa* *naShingi.*
ma-nhanga a-ka-bik-w-a na-Shingi.
CL6-pumpkin AGR6-PST-cook-PASS-FV by-Shingi
'Pumpkins were cooked by Shingi'

b. *Mufaro* *akabikirwa* *manhanga* *naShingi.*
M a-ka-bik-ir-w-a ma-nhanga na-S.
M AGR1-PST-cook-APPL-PASS-FV CL6-pumpkin by-S
'For Mufaro were cooked pumpkins by Shingi.'

In (2)a, the direct object *manhanga* 'pumpkin' is passivized, and in (2)b, the benefactive applied object, *Mufaro*, is passivized.

Furthermore, both the direct object and the applied object can be referenced by object markers on the verb, as seen in (3).

(3) a. *Mufaro* *akabikira* *Shingi* *mbudzi.*
M. a-ka-bik-ir-a S. mbudzi.
M. AGR1-PST-cook-APPL-FV S. goat
'Mufaro cooked the goat for Shingi'

b. *Mufaro* *aka**yi**bikira* *Shingi*
M. a-ka-**yi**-bik-ir-a S.
M. AGR1-PST-**CL9.OBJ**-cook-APPL-FV S.
'Mufaro cooked it for Shingi'

c. *Mufaro* *aka**mu**bikira* *mbudzi*
M. a-ka-**mu**-bik-ir-a mbudzi
M. AGR1-PST-**CL1.OBJ**-cook-APPL-FV goat
'Mufaro cooked the goat for him/her'

In (3)a, both the direct object *mbudzi* 'goat' and the applied object *Shingi* appears as full DPs. In (3)b, the direct object is omitted, but referenced by an object prefix *yi-* on the verb. In (3)c, the applied object is omitted, but referenced by an object prefix *mu-* on the verb.

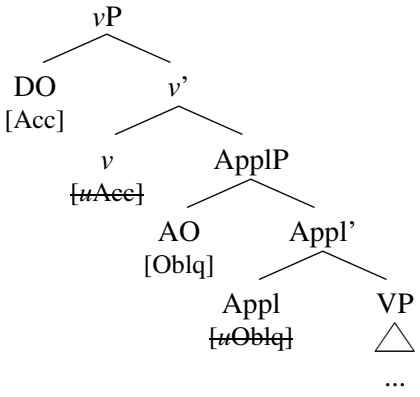
In sum, both direct object and applied objects in Shona can passivize and be referenced by object markers. Thus, Shona meets the diagnostics for symmetry. In the following section, I discuss how symmetry (and asymmetry) can be modelled in a Minimalist framework.

3 Modelling symmetry

(A)symmetry in Bantu is typically assumed to be parametric variation in the distribution of grammatical roles. In this paper, I adopt a Minimalist framework, in which variation in grammatical role assignment can be modelled as variation in case checking. Under this framework, case-checking involves a probe/goal relationship, in which a probe (typically T or *v*) seeks the closest eligible DP goal to check its case feature (Chomsky 1995; 2001). I also adopt Pylkkänen's (2008) claim that applied objects are introduced in the Specifier of an Applicative Phrase, or ApplP.

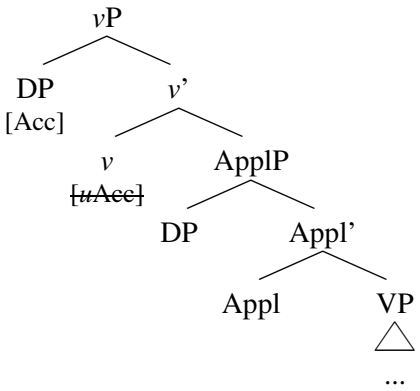
I suggest that the difference between symmetrical and asymmetrical languages is that they have a different number of case-checking heads. In a symmetrical language, there are two heads with structural case features that require checking. The first of these is *v*, which has an Accusative case feature to be checked (Adger 2003), and the second is the Appl head, which I assume, in symmetrical languages, has an Oblique case feature to be checked. Consequently, because there are two case-checking heads, both the direct and applied objects check structural case. This is depicted in (4).

(4)



In asymmetrical languages, on the other hand, the Appl head does not bear a structural case feature, and as a result, there is only one case position, namely the Specifier of *v*P. In this type of structure, it is the closest DP to *v* (either the direct object or the applied object) that checks Accusative case. This is depicted in (5).

(5)



In short, symmetry versus asymmetry in Bantu can be modelled as a difference between the number of case-checking heads. If the Appl head checks structural case, then the language is case-symmetrical, and if the Appl head does not check structural case, then the language is case-asymmetrical. In the following section, we will see that Shona patterns as case-asymmetrical, despite the fact that it meets the aforementioned diagnostics for symmetry.

4 Shona is case-asymmetric

In this section, I argue that, in Shona, accusative case is checked in *v* by either the applied object or the direct object, rendering it a case-asymmetric language. The primary piece of evidence for this claim comes from asymmetries observed between different thematic categories of applied objects. In particular, locative AOs behave differently than other types of AOs, and I will argue that this is because only non-locative AOs check accusative case.

4.1 AO asymmetries

As noted, Shona AOs are generally classified into one of three thematic categories: BENEFICIARY, GOAL, or LOCATION. In this section, I demonstrate that locative AOs behave differently than benefactive and goal AOs.

First, whereas benefactive and goal AOs necessarily precede and c-command the direct object, locative AOs necessarily follow and are c-commanded by it. Examples illustrating the word order facts are given in (6) and (7) below. (C-command follows linear order; for illustrative examples, see Bliss (2009)).

(6) a. *Ndakabikira Shingi keke.*
nd-aka-bik-ir-a S Ø-keke
1-PST-cook-APPL-FV S CL5-cake
'I baked Shingi a cake.' **V-AO-DO**

b. *?Ndakabikira keke Shingi*
'I baked Shingi for the cake' ***V-DO-AO**
cannot mean: 'I baked a cake for Shingi.'

(7) a. *Ndakabikira manhanga mumba.*
nd-aka-bik-ir-a ma-nhanga mu-mba
1-PST-cook-APPL-FV CL6-pumpkin CL18-house
'I cooked pumpkins in the house.' **V-DO-LocAO**

b. **Ndakabikira mumba manhanga.* ***V-LocAO-DO**

In (6)a, the benefactive AO *Shingi* precedes the direct object *keke* 'cake.' If this word order is reversed, then *keke* is interpreted as the beneficiary, and *Shingi* the theme. Thus, the direct object (DO) necessarily precedes the AO. However, if the applied object is locative, as in (7)a, it obligatorily follows the direct object. (7)b illustrates the ungrammatical word order in which the locative AO precedes the direct object.

A second way in which locative AOs are different from other AOs is in their ability to co-occur with a causee. Like the applicative suffix *-ir*, the causative suffix *-is* introduces an extra argument to the predicate. This is shown in (8).

(8) a. *Shingi akabika manhanga*
S. aka-bik-a ma-nhanga
S. PST-cook-FV CL6-pumpkin
'Shingi cooked the pumpkins'

b. *Ndakabikisa* *Shingi* *manhanga.*
nd-aka-bik-is-a S. ma-nhanga
1-PST-cook-CAUS-FV S. CL6-pumpkin
'I made Shingi cook the pumpkins.'

Because both the applicative suffix and the causative suffix introduce additional arguments, we might predict that, when the two suffixes both appear on the verb, two additional arguments will appear. Indeed, this prediction is borne out only for locative AOs. As observed in (9) and (10), non-locative AOs cannot co-occur with a causee, but locative AOs can.

(9) a. **Ndakabikisira* *Shingi* *Mufaro* *keke*.
nd-aka-bik-is-ir-a S. M. Ø-keke
1-PST-cook-CAUS-APPL-FV S. M. CL5-cake
intended: 'I made Mufaro bake Shingi a cake.'

b. *Ndakabikisira* *Mufaro* *keke*.
nd-aka-bik-is-ir-a M. Ø-keke
1-PST-cook-CAUS-APPL-FV M. CL5-cake
'I made someone bake Mufaro a cake.'
cannot mean: 'I made Mufaro bake someone a cake.'

(10) *Ndakabikisira* *Shingi* *manhanga* *mumba.*
nd-aka-bik-is-ir-a S. ma-nhanga mu-mba
1-PST-cook-CAUS-APPL-FV S CL6-pump CL18-house
'I made Shingi cook the pumpkins in the house.'

In (9)a, we see that it is ungrammatical for a causee *Mufaro* to co-occur with a benefactive AO *Shingi*. However, (9)b, in which the causee is omitted, is grammatical. In (10), on the other hand, a locative AO *mumba* co-occurs with a causee *Shingi*. Thus, the restriction against both a causee and an AO appearing in a single clause does not extend to locative AOs.

4.2 Why locative AOs are different

The key to understanding the differences between locative and other applied objects lies in the differences in their morphological make-up. Locative applied objects, unlike the others, appear with a locative noun class prefix.

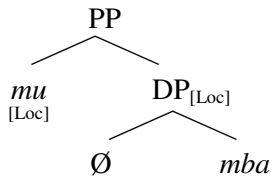
Like other Bantu languages, Shona has an extensive noun class system, consisting of twenty-one prefixes. Three of these prefixes, class 16 *pa-*, class 17 *ku-*, and class 18 *mu-*, are locative, and obligatorily co-occur with other (non-locative) prefixes (Brauner 1995). An example clearly illustrating this is given in (11) below.

(11) *Makudo* *akagara* ***mumu****ti.*
ma-kudo aka-gar-a **mu-mu**-ti
CL3-baboon PST-sit-FV **CL18-CL3**-tree
'The baboons sat in the trees.'

As for the locative applied objects such as *mumba* in the preceding examples, these have a locative class prefix, followed by a null class prefix, and finally the noun stem.

My proposal is that, in Shona, the locative noun class prefixes function as a prepositions to assign lexical case to the applied object. Because the locative prefixes obligatorily precede another prefix, it is clear that the locative and other noun class prefixes are not a homogeneous set. I assume that the non-locative prefixes are merged somewhere within the DP, and I propose that the locative prefixes are merged higher, in a position where they can assign lexical case to the DP. This is depicted in (12).

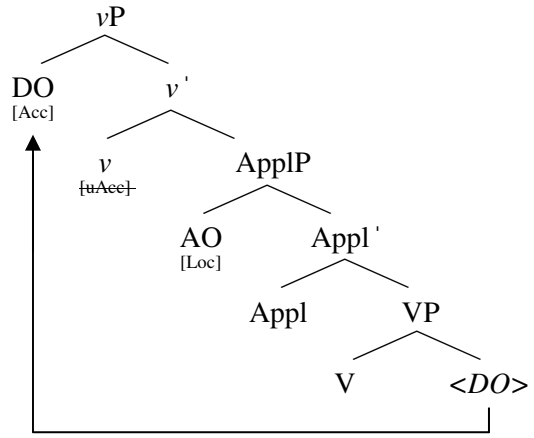
(12)



4.3 Accounting for Asymmetries

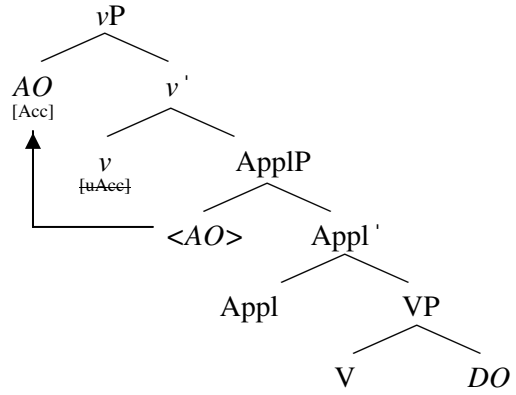
The proposal that locative applied objects are assigned lexical case can account for the asymmetries observed between locative and other applied objects. Because the locative applied objects are assigned lexical (locative) case, they are therefore ineligible for structural case checking. The result is that the direct object is the closest eligible DP that can check accusative case in *v*, resulting in V-DO-LocAO order,[2] as shown in (13).

(13)



As observed in §4.1, non-locative applied objects precede and c-command the direct object. In order to derive this word order, the applied object, and not the direct object, must check accusative case in *v*. The direct object is then assigned inherent case as a last resort (Baker 1996). This is depicted in (14).

(14)



Importantly, this analysis assumes asymmetric case checking. The word order asymmetry is accounted for in terms of structural case checking on a single head, *v*. The applied object precedes the direct object when it checks accusative case in *v*, and the direct object precedes the (locative) applied object when in checks accusative case.

The other asymmetry observed in §4.1, the causee co-occurrence asymmetry, is also accounted for. Recall that locative but not non-locative AOs can co-occur with a causee in causative clauses. Let us

[2] V-to-T movement accounts for the fact that the verb precedes the DO and AO (independently motivated for Shona by Demuth & Harford 1999).

assume that both the applied object and causee require case but there is only one structural case position for objects, the Specifier of *v*P. When the applied object is locative, it receives lexical case, and the causee can therefore check accusative case in *v*. When the applied object is not locative, it checks accusative case in *v*, and as a result, the causee does not receive case and is not licensed.

4.4 Summary

In summary, I have argued in this section that the observed asymmetries between locative and other (non-locative) applied objects result from different case-checking relations. I have proposed that the accusative case feature on *v* is checked by the applied object, unless it is locative, in which the applied object is assigned lexical case by the noun class prefix. Crucially, this means that Shona is case-asymmetric, with *v* assigning case to either the applied object or the direct object, but not both. In the following section, I revisit some of the diagnostics of symmetry, and demonstrate that they are not case-related.

5 Deconstructing the diagnostics

Recall from §2 that Shona meets the classic diagnostics for symmetry. In this language, both the applied object and the direct object can passivize, and both can be referenced by object prefixes on the verb. However, in the preceding section, we saw that Shona is best analysed as a case-asymmetrical language. The question that is addressed in this section is, if Shona is case-asymmetrical, why does it pattern like a symmetrical language? The answer I propose is that Shona symmetry is attributable to information structure, rather than case. I will address each of the diagnostics of symmetry in turn.

5.1 "Passivization" = topicalization

The findings in this section are a synopsis of Bliss and Storoshenko's (2008, 2009) claim that what appears to be passivization in Shona is not an A-movement operation, but rather an instance of A'-movement for reasons of topicalization.

5.1.1 Shona passive is not promotional

The first piece of this argument is to demonstrate that the Shona passive is not an A-movement operation that promotes an internal argument. Unlike canonical passive constructions, the Shona passive does not discriminate between arguments and adjuncts. This is shown in (15) through (17).

(15) a. S*hingi akabikira* *Mufaro manhanga.*
S. a-ka-bik-ir-a Mufaro ma-nhanga.
S. AGR1-PST-cook-APPL-FV M. CL6-pumpkin
'Shingi cooked pumpkins for Mufaro.'

Direct Object

b. *Manhanga* *akabikir**w**a* *Mufaro* *naShingi.*
ma-nhanga a-ka-bik-ir-**w**-a M na-S.
CL6-pumpkin AGR6-PST-cook-**PASS**-FV M. by-Shingi
'Pumpkins were cooked for Mufaro by Shingi'

Applied Object

c. *Mufaro akabikir**w**a* *manhanga* *naShingi.*
M a-ka-bik-ir-**w**-a ma-nhanga na-S.
M AGR1-PST-cook-APPL-**PASS**-FV CL6-pumpkin by-S
'For Mufaro were cooked pumpkins by Shingi.'

(16) a. *Murume akafamba nomukadzi wake.*
mu-rume a-ka-famb-a no-mu-kadzi wake.
CL1-man AGR1-PST-walk-FV with-CL1-woman POSS
'The man walked his wife.'

Companion Adjunct

b. *Mukadzi akafamb**w**a naiye nomurume.*
Mu-kadzi a-ka-famb-**w**-a na-iye no-mu-rume
CL1-woman AGR1-PST-walk-**PASS**-FV with-3SG by-CL1-man
'The woman was walked with by the man'

(17) a. *Murume akafamba musango.*
mu-rume a-ka-famb-a mu-sango.
CL1-man AGR1-PST-walk-FV CL18-forest
'The man walked in the forest'

Locative Adjunct

b. *Musango makafamb**w**a nomurume.*
mu-sango m-aka-famb-**w**-a no-mu-rume
CL18-forest AGR1-PST-walk-**PASS**-FV by-CL1-man
'In the forest was walked by the man'

In (15), we see that either the direct object or the applied object can be passivized. In (16), a companion adjunct is passivized, and in (17), a locative adjunct (not introduced by the applicative) is passivized. That these types of DPs can passivize suggests that the Shona passive does not involve moving arguments into a higher A-position. In fact, the passive need not involve movement at all, as shown in (18).

(18) *Kwakabikwa naMufaro.*
Ku-aka-bik-w-a na-M
INF-PST-cook-PASS-FV by-M
'There was cooking by Mufaro.'

(18) is an example of an impersonal passive. That the passive need involve movement suggests that it is demotional, rather than promotional. Thus, we conclude that the passive in Shona is not an instance of A-movement.

5.1.2 Subject position = topic position

Bliss and Storoshenko (2008, 2009) argue that the movement associated with the passive is not A-movement, but rather topicalization. This claim is based on the widely attested overlap between subject and topic in the Bantuist tradition (e.g. Bresnan & Mchombo 1987; Givón 1976). The evidence that is often cited for Bantu subjects as being topical come from data on *wh*-questions (Demuth and Johnson 1989). The observation is that a basic declarative sentence can be used as a response to a *wh*-question that questions the object, but not one that questions the subject. Consider the following Shona examples:

(19) Q: *Shingi akadonera payichi?*
S. a-ka-don-er-a pa-ichi
S AGR1-PST-fall-APPL-FV CL16-what
'What did Shingi fall on?'

A: *Shingi akadonera pasi.*
S. a-ka-don-er-a pa-si.
S. AGR1-PST-fall-APPL-FV CL16-ground
'Shingi fell on the ground.'

(20) Q: *Ndiyana akabika manhanga?*
ndiyana a-ka-bik-a ma-nhanga
who AGR1-PST-cook-FV CL6-pumpkin
'Who cooked the pumpkins?'

A: *Ndiye Shingi akabika manhanga.*
ndiye S. a-ka-bik-a ma-nhanga.
it.was S. AGR1-PST-cook-FV CL6-pumpkin
'It was Shingi who cooked the pumpkins.'

A: *#Shingi akabika manhanga.*

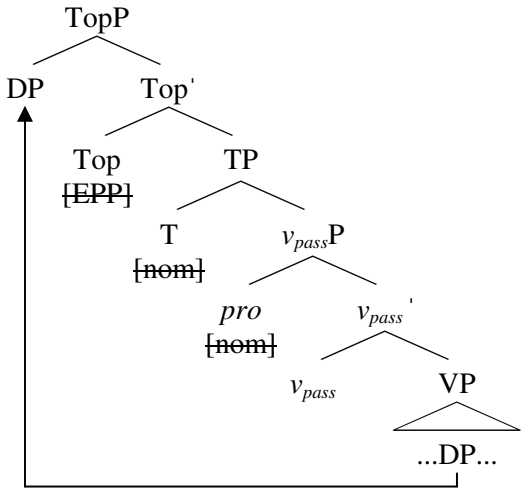
In (19), a basic declarative is used to answer a question about the object, but in (20), a declarative is not permitted as the answer to a question about the subject. Rather, a cleft construction must be used in this context. The explanation that is offered for this asymmetry is that the response to a wh-question is focused. Because subjects in Bantu are topical, they cannot be used in focal contexts, such as the answers to *wh*-questions.

Based on this type of data, Bliss and Storoshenko argue that the subject position in Shona is in fact a topic position, Top(ic)P in the left clausal periphery. Following Rizzi (1997), we assume that TopP is an A'-position, and we argue that apparent passivization in Shona is in fact EPP-driven movement to the Specifier of TopP.

5.1.3 Passive + topicalization

We claim that Top bears an EPP feature, requiring movement of the closest topical DP to Spec, TopP. T, on the other hand, is the locus of tense and nominative case, but has no EPP feature. We argue that the passive morpheme –w is a particular instantiation of v, and that passive v (or vpass) demotes the agent by taking a pro subject. The pro subject checks nominative case on T, but cannot satisfy the EPP. The EPP on Top is then satisfied by movement of any (topical) constituent from the VP domain to Spec, TopP. This is shown in (21).

(21)



In short, because passive-related topicalization can target any DP in the VP domain (argument or adjunct) it cannot be used as a diagnostic for case-related symmetry.

5.2 Object markers mark information structure

The second diagnostic of symmetry is object marking. Recall from §2 that both direct and applied objects can be reference by object prefixes on the verb. Object marking in Bantu languages is often taken

as a diagnostic of primary objecthood. Object markers are variably analysed as agreement with the primary object or pronominal primary objects (e.g. Baker 1988; Bresnan and Mchombo 1987). However, object markers in Shona appear to be neither object agreement nor object pronouns. Instead, object markers contribute a meaning of "emphasis," which suggests that object markers play an information structural role in the grammar.

5.2.1 "Object" markers ≠ object agreement

The first part of the argument is to show that object markers are not a form of object agreement. If object makers were agreement, then they should be obligatory whenever a primary object appears in the clause. However, object markers are optional with primary objects, as seen in (22) and (23).

(22) a. *Ndakabikira* *Mufaro keke.*
nd-aka-bik-ir-a M. keke.
1-PST-cook-APPL-FV M. cake
'I baked Mufaro a cake.'

b. *Ndaka**mu**bikira* *Mufaro keke.*
nd-aka-**mu**-bik-ir-a M. keke.
1-PST-**CL.OBJ**-cook-APPL-FV M. cake
'I baked Mufaro a cake.'

(23) a. *Ndakapa* *chipo.*
nd-aka-p-a chipo.
1-PST-give-FV gift
'I gave someone a gift.'

b. *Ndaka**mu**pa* *chipo.*
nd-aka-**mu**-p-a chipo
1-PST-**CL1.OBJ**-give-FV gift
'I gave someone a gift.'

The optionality of object marking suggests that it is not agreement.

5.2.2 "Object" markers ≠ object pronouns

The other option to consider is whether object markers are object pronouns, cliticized to the verb. If object markers were pronouns, then they should be restricted to refer to objects. However, as seen in (24) and (25), object markers can also refer to adjuncts.

(24) *Ndaka**mu**mhanya*
nd-aka-**mu**-mhany-a
1-PST-**CL18.OBJ**-run-FV
'I ran there'

(25) *Ndaka**pa**svika* *pamusangang*
nd-aka-**pa**-svik-a pa-musangang
1-PST-**CL16.OBJ**-arrive-FV CL16-meeting
'I arrived at the meeting.'

That object markers need not refer to objects suggests that they are not tied to a particular grammatical role or case position.

5.2.3 Information structural contribution of OMs

The preceding sections demonstrated that the so-called object markers in Shona are neither object agreement nor object pronouns. In this section, I argue that object markers make an information structural contribution, perhaps by marking topic.

When the object marker is coreferential with a full DP, the DP is described as "emphatic" (Fortune 1985), but when the object marker is not coreferential with a full DP, it refers to something discourse-old (e.g. topical). Consider the following:

(26) a. *Mufaro adira mugirazi.*
M. a-dir-a mu-girazi.
M. 3-pour-FV CL18-glass
'Mufaro poured something into a glass'

b. *Mufaro a**ri**dira mugirazi.*
M. a-**ri**-dir-a mu-girazi.
M. 3-**CL5.OBJ**-pour-FV CL18-glass
'Mufaro poured it in a glass'

In (26)a no object marker is used and the (unspecified) theme is non-referential. This sentence could be used in an out-of-the-blue context without any previous reference to what is being poured in the glass. The addition of the object marker in (26)b, however, renders the theme definite and discourse-familiar. This sentence could only be used felicitously in a context in which what is being poured in the glass has already been mentioned.

Examples like (26) suggest that the object marker may mark topical objects. However, object markers can be used in answers to wh-questions, as observed in (27).

(27) Q: *Shingi akadonera payichi?*
'What did Shingi fall on?'

A:. *Shingi aka**pa**donera pasi.*
S. a-ka-**pa**-don-er-a pa-si.
S. AGR1-PST-**CL16.OBJ**-fall-APPL-FV CL16-ground
'Shingi fell there, on the ground.'

The appearance of object markers in *wh*-answers suggests they are not strictly discourse-old; they may also be discourse-new, or focal.

Although it is yet unclear precisely what role object markers play in the grammar, it is apparent that they mark some sort of information structural notion, rather than primary objecthood.

5.3 Summary

To summarize, two often cited diagnostics of symmetry, namely passivization and object marking, in fact do not diagnose a case-related symmetry at all. Neither passivization nor object marking target primary objects exclusively, but rather, both are related to information structural notions, such as topic and focus. As such, the appearance of symmetry in Shona is information structural, not case-related.

6 Conclusions

In this paper, I have approached the question of symmetry in Shona from two angles. First, in looking at the notions of structural case and primary objecthood, I have shown that Shona is not case symmetrical; either the applied object or the direct object check accusative case, but not both. Second, in looking at the classic diagnostics of symmetry, I have shown that what is thought of as symmetry in

Shona does not involve case, but rather information structural notions, such as topic and focus. Thus, although Shona appears on the surface to be a symmetrical language, this symmetry is not a case symmetry, as is often assumed.

Typologically, this is a welcome result, as Bantu languages are notable exceptions to universal tendencies against symmetry. For example, the Person Case Constraint, which is said to be a language universal, states that if there is agreement with an applied object, then the direct object must be 3rd person (Bonet 1991). The Person Case Constraint is inherently asymmetrical, and if it is universal, then symmetrical Bantu languages should not exist. However, if symmetry in Bantu is related to information structure, then Bantu is no longer exceptional in this regard. It remains to be seen whether the analysis of Shona given here can be extended to other Bantu languages.

References

Adger, D. 2003. *Core Syntax: A Minimalist Approach*. Oxford: Oxford University Press.

Alsina, A., and S. Mchombo. 1993. Object asymmetries and the Chichewa applicative construction. *Theoretical Aspects of Bantu Grammar*, ed. by S. Mchombo, 17-45. Stanford: CSLI Publications.

Baker, M. 1988. Theta theory and the syntax of applicative constructions in Chichewa. *Natural Language and Linguistic Theory* 6:3. 353-389.

Baker, M. 1996. On the structural position of themes and goals. *Phrase Structure and the Lexicon*, ed. by J. Rooryck and L. Zaring, 7-34. Dordrecht: Kluwer.

Bliss, H. 2009. Comparing APPLs and Oranges: The Syntax of Shona Applicatives. Qualifying Paper, UBC. To appear in *Select Proceedings of ACAL 39*.

Bliss, H., and D.R. Storoshenko. 2008. Passivization and A'-movement in Shona. *Proceedings of the 2008 Annual Conference of the Canadian Linguistics Association*.

Bliss, H., and D.R. Storoshenko. 2009. *Grammaticization of Topic in Shona*. Paper presented at the 3rd International Conference on Bantu Linguistics. Teruven, Belgium: March 23-25, 2009.

Bonet, E. 1991. *Morphology after syntax: Pronominal clitics in Romance*. PhD dissertation, Massachusetts Institute of Technology.

Brauner, S. 1995. *A Grammatical Sketch of Shona: Including Historical Notes*. Köln: Rüdiger Koppe.

Bresnan, J., and S. Mchombo. 1987. Topic, Pronoun, and Agreement in Chichewa. Language 63: 741-782.

Bresnan, J., and L Moshi. 1990. Object asymmetries in comparative Bantu syntax. *Linguistic Inquiry* 21: 147-186.

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

Chomsky, N. 2001. Derivation by phrase. *Ken Hale: A Life in Language,* ed. by Michael Kenstowicz, 1-52. Cambridge, MA: MIT Press.

Demuth, K., and C. Harford. 1999. Verb Raising and Subject Inversion in Comparative Bantu. *Journal of African Languages and Linguistics* 20(1): 41-61.

Demuth, K., and M. Johnson. 1989. Interactions between discourse functions and agreement in Setawana. *Journal of African Languages and Linguistics* 11, 22-35.

Fortune, George. 1985. *Shona Grammatical Constructions*. Harare: Mercury Press.

Givón, T. 1976. Topic, Pronoun and Grammatical Agreement. In: Li C, ed. *Subject and Topic.* New York: Academic Press, 149-188.

Pylkkänen, L. 2008. *Introducing Arguments*. Cambridge, Mass: MIT Press.

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Tone-Bearing Units in Quiaviní Zapotec: The split between Fortis and Lenis Sonorants*

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A large amount of evidence in the literature has established the mora as the prosodic tone-bearing unit (Hyman 1985, Pulleyblank 1994, Jiang-King 1999, among others). Moreover, there are languages in which the tone-bearing unit is not just any mora, but sonorant moras only (Yip 2002: 73; see Zec 1988 and Steriade 1991). Quiaviní Zapotec (Otomanguean) behaves in this way as vowels and coda sonorants bear tone. However, based on the fortis/lenis distinction, this study claims for a split between fortis and lenis sonorants, in that only the former are tone-bearing. Phonological and phonetic evidence support this proposal.

1 Introduction

Under non-linear phonology (e.g. Autosegmental Phonology (Goldsmith 1976)), tone is represented on a separate tier from the segmental and prosodic material. A tone is only realized on the surface if it is associated with some segment or prosodic entity such as the syllable or the mora, on which it is eventually pronounced. A large amount of evidence in the literature has established the mora as the prosodic tone-bearing unit (TBU; Hyman 1985, Pulleyblank 1994, Jiang-King 1999, among others). Moreover, there are languages in which the TBU is not just any mora, but vocalic or sonorant moras only (Yip 2002: 73; see Zec 1988 and Steriade 1991 for discussion). In fact, according to Hyman (1992), the most common TBU is the sonorant mora.

Taking into account this theoretical background, I assume that the mora is the TBU in Quiaviní Zapotec (Otomanguean), a tonal language spoken in southern Mexico. The question remains, however, on how tone is manifested at the segmental level. In other words, what the tone bearing segments are in this language. I predict vowels to express tone, as they are the optimal segments to do so, but Quiaviní Zapotec also has a wide variety of syllable rhymes, with different types of consonants in the coda. Of particular interest is the pervasive fortis/lenis distinction in the consonant inventory, a contrast that is found both in obstruents and sonorants. The goal of this study, then, is to determine the segmental TBU in Quiaviní Zapotec. By doing so, I hope to shed light on the possible interaction between tone and the fortis/lenis distinction.

The study is organized as follows, section 2 presents the phonemic and tonal inventory of Quiaviní Zapotec, section 3 analyzes the moraic status of consonants, and section 4 examines the phonetic evidence with respect to the capability of coda consonants to bear tone. The study concludes with section 5.

2 Quiaviní Zapotec phonemic and tonal inventories

Following Munro and Lopez (1999), Table 1 presents the consonant inventory of Quiaviní Zapotec.

* Thanks to my consultants Tiu Rogel and Tiu Lyony from San Lucas Quiaviní, Oaxaca, Mexico. *X:tyoozënn yùad.* All Zapotec data comes from personal fieldwork. This paper has greatly benefited from comments and discussion with Francisco Arellanes, Bryan Gick, Calisto Mudzingwa, Pam Munro, Doug Pulleyblank, Thomas Smith-Stark (†), Joe Stemberger and Moira Yip. All the mistakes are mine. Research funded by SSHRC, granted to Joe Stemberger and by Ph.D. CONACYT fellowship granted to the author.

Table 1. Quiaviní Zapotec Consonants (Munro & Lopez 1999)

		Bilabial	Lab-dent	Dental/Alveolar	Prepalatal	Retroflex	Palatal	Velar
Plosive	fortis	p		t				k
	lenis	b		d				g
Nasal	fortis	mˑ		nˑ				ŋˑ
	lenis	m		n				ŋ
Trill				r				
Tap				ɾ				
Fricatives	fortis		f	s	ʃ	ʂ		x
	lenis			z	ʒ	ʐ		
Lateral	fortis			lˑ				
	lenis			l				
Affricate	fortis			ts			tʃ	
Glides							j	w

Similar to other Zapotec languages, Quiaviní Zapotec has a fortis/lenis contrast rather than a strict voiced/voiceless contrast in its consonant pairs. Fortis obstruents are voiceless, never fricated and relatively long. Lenis obstruents are often (but not always) voiced, variably fricated, and relatively short. For sonorants, the main difference between fortis and lenis is duration, with fortis being longer. In addition, lenis sonorants may be devoiced word finally. (As the table above shows, I am representing fortis sonorants with the semi-long IPA symbol.)

The existence of fortis and lenis consonants as natural classes, both in obstruents and sonorants, is mainly based on the following two points: first, fortis consonants have the *unmarked* characteristics of the class of consonants they belong too. As mentioned above, fortis obstruents are always voiceless (and stops always [-cont]), whereas fortis sonorants are always voiced and with a well defined formant structure (this will be illustrated below). (The lenis consonants are the *marked* elements within their class.) Second, fortis consonants are invariant, the only allophonic variation they present is with respect to their duration (due to prosody as shown in the next section); lenis consonants, on the other hand, vary their realization depending on the context (e.g. lenis obstruents are voiced intervocalically but voiceless word finally).[1]

Quiaviní Zapotec has the following six vowels: / i, ɨ, u, e, o, a /, as well as several diphthongs. With respect to tone, this language has four contrastive tones (Chávez-Peón 2008; cf. Munro & Lopez 1999), consisting of two level tones, high and low, and two contour tones, rising and falling. Consider the following examples.

(1) High / nda / ˥ ‘bitter’
(2) Low / nda / ˩ ‘sensitive’
(3) Rising / dad / ˧˥ ‘father’
(4) Falling / nda̰ / ˥˩ ‘hot’

In addition to tone, this language has contrastive phonation types (Munro & Lopez 1999): modal, breathy, creaky, checked vowels. This study, however, is restricted to modal voice.

[1] The specific feature [+/-fortis] has been proposed in the literature (Kohler 1984), and the theoretical concept goes back to Jakobson, Fant & Halle (1952) as [+/-tense]. The precise feature, however, is irrelevant for the purpose of this study, as the existence of fortis and lenis is valid beyond the featural specification.

3 Quiaviní Zapotec moraicity

As the prosodic status of a segment is crucial with respect to its possibility of expressing tone, it is necessary to define first the moraicity of consonants in Quiaviní Zapotec. As illustrated below, short vowels appear before fortis consonants and long vowels before lenis consonants (or in open syllables).

(5) Word types in Quiaviní Zapotec

	obstruents		sonorants	
i. CVC_{fortis}	bat̲ː	'skunk'	nanː	'knows'
ii. $*CVC_{lenis}$	*bad		*nan	
iii. $*CVːC_{fortis}$	*baːtː		*taːnː	
iv. $CVːC_{lenis}$	baːd̲	'scabies'	nan	'thick'

(also CVː words)

This pattern is adequately explained in terms of minimality and moraicity (Arellanes & Chávez-Peón 2009). The minimal prosodic word in the language is a bimoraic foot (cf. Kager 1999: 143-144), which, in conjunction with the tendency for monosyllables in the language, gives us two patterns in the language, depending on the coda consonant (or its absence). First, by virtue of the *Weight-by-Position* principle fortis consonants are moraic, and together with the vowel the word would have two moras, satisfying the minimality constraint. Second, if the word has a lenis consonant in the coda, the vowel lengthens to become bimoraic and satisfy minimality. Vowel lengthening is evidence that lenis consonants do not contribute to syllable weight. In summary, the following four points explain Quiaviní Zapotec moraicity.

(6) a. Minimal Prosodic Word = bimoraic foot

b. Fortis consonants are moraic (*Weight-by-Position*) $ba̲_{\mu}t_{\mu}$

c. Lenis consonants are non-moraic (**Lenis* ⇔ μ)

d. Vowels lengthen (become bimoraic) $ba̲_{\mu\mu}d$

Since tone associates with the mora, as stated in §1, only moraic segments will bear tone. Among the moraic segments, I assume vowels bear tone in Quiaviní Zapotec. As outlined above, fortis consonants are moraic in coda in Quiaviní Zapotec. Among them, fortis sonorants should be able to bear tone, but fortis obstruents, despite being moraic, are predicted not to bear tone, as they are voiceless. Finally, since the prosodic affiliation of segments determines their TBU status, it follows that lenis consonants (including sonorants) will not bear tone. In sum, anticipating the data, the prediction is that vowel and fortis sonorant moras are the TBU's of Quiaviní Zapotec. I now turn to the phonetic and phonological analysis of tone in Quiaviní Zapotec.

4 Quiaviní Zapotec segments

Phonetically, the perception of tone is mostly dependent on pitch perception, hence, on fundamental frequency (F0) —the number of cycles per second in the vibration of the vocal folds. For distinct tones to be perceived, the signal must contain F0 fluctuations, and these must be large enough to be perceptible as pitch differences (see Ohala 1978, among others). Voicing, then, is a requirement to express tone, and, thus, all voiced segments may encode phonological tone. Moreover, the most important factor to determine the pitch of the voice is the tension of the vocal folds. If the vocal folds are stretched, the pitch of the sound will go up. Altering the tension of the vocal folds is the normal way of producing most of the pitch variations that occur in a given language (other factors, such as intensity and voice quality, also determine the pitch of the voice).

Considering the previous facts, vowels are the optimal segments to bear tone due to their regular and sustained pitch. Along with vowels, glides, liquids and nasals are all sonorants, sounds in which the

pressure above the larynx allows the vocal cords to vibrate continuously (without any rise in pressure above the larynx). Consequently, after vowels, liquids and nasals are most likely to bear tone. Finally, obstruents are the least likely to bear tone. A main characteristic of obstruent segments is that they involve a significant narrowing or closure of the oral tract, thereby reducing the resonance. This stricture reflects the cross-linguistic preference for obstruents to be voiceless (the presence of voiced obstruents in a phonological system implies voiceless ones)[2]. Despite this, voiced obstruents have pitch, and there are a small number of languages in which tone can be manifested in obstruents (Clements 2000). Taking into account these facts, I now turn to examine different types of consonants in Quiaviní Zapotec.

4.1 Obstruents

The phonetics of tone requires voicing and, as mentioned above, the constriction that characterizes obstruent segments makes it very difficult, and impossible in some cases, for these sounds to bear tone. In the particular case of Quiaviní Zapotec, it is necessary to bear in mind the fortis/lenis distinction. As the former are always voiceless, the lack of voicing inhibits these segments from manifesting pitch (tone), regardless of the fact that they are moraic in coda position (§3). It remains to be determined whether lenis obstruents are able to bear tone in this language. Lenis obstruents are voiced intervocalically, but may devoice word initially, and they are, most of the time, voiceless in word final position. In addition, these segments are analyzed as non-moraic (§3), based on the fact that vowels followed by lenis consonants become long in order to satisfy the bimoraic requirement of the minimal word. All in all, the characteristic stricture of obstruents, the inconsistency of their voicing, and their non-moraic prosodic status indicate that lenis obstruents are predicted not to bear tone in Quiaviní Zapotec. The data support this position.

In order to analyze the tonal behavior of lenis obstruents in Quiaviní Zapotec, I consider the production of lenis stops /b, d, g/ and lenis fricatives /z, ʒ/ in coda position in the following lexical items.

Table 2. Stimuli lenis obstruents (stops / b, d, g / and lenis fricatives / z, ʒ /)

/ z̨ub /	˥˩	→	[z̨uːb]	‘dried corn kernel’
/ zhyab /	˥˩	→	[zhyaːb]	‘bad’
/ dad /	˧	→	[daːd]	‘dice’
/ dad /	˥˩	→	[daːd]	‘father’
/ nlˑag /	˩	→	[nlˑaːg]	‘wide’
/ lug /	˥˩	→	[luːg]	‘from San Lucas’
/ gaz /	˩	→	[gaːz]	‘seven’
/ klaz /	˧	→	[klaːz]	‘Nicolasa’
/ nɾaʒ /	˧	→	[nɾaːʒ]	‘orange’
/ giʒ /	˥˩	→	[giːʒ]	‘city person’

The words were produced three times in isolation by two male native speakers (TiuR, 50 years old, and TiuL, 35). All lenis obstruents demonstrated the following patterns: they were produced as voiceless or partially voiceless; when they manifested pitch, it was inconsistent, dropping for the most part, and without continuation of the shape of the phonological tone manifested in the vowel. These characteristics held regardless of the type of tone, confirming the prediction that lenis obstruents are not tone-bearing in Quiaviní Zapotec.

As an illustration, Figure 1 shows a vowel with rising tone before a lenis plosive, spoken by a male speaker. From the middle to the end of the vowel, the pitch rises from 125 to 144 Hz. As soon as the

[2] Obstruents, particularly plosives, have been analyzed as the antithesis of vowels (Jakobson 1941/1968).

lenis plosive (phonetically voiced fricative) starts, the pitch becomes inconsistent. First, it slightly drops (138 Hz), then it stays flat, and finally shows a small rise. The lenis obstruent does not continue the shape of the phonological tone manifested in the vowel, nor does it show any different pitch contour of its own.

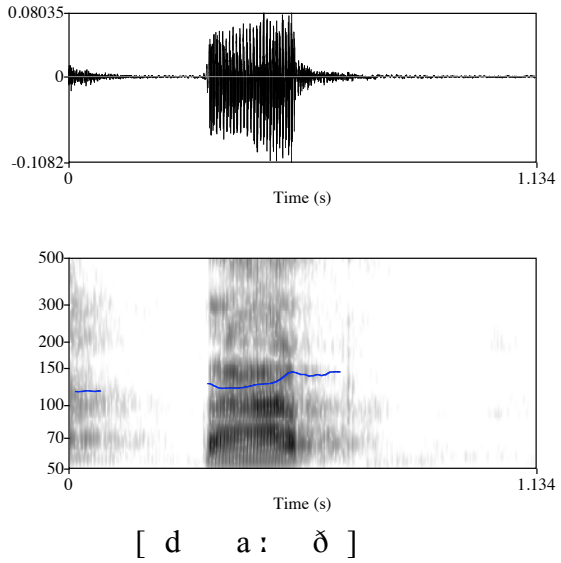

Figure 1. Waveform and spectogram[3] of / dad / ʌ 'father', by male speaker TiuR[4].

Lenis fricatives show the same inconsistency; they cannot manifest pitch. In Figure 2, the example of / giʒ / ʌ 'city person' illustrates the behavior of lenis fricatives in coda position. During the vowel, we observe the pitch rising, but as soon as the fricative begins, the pitch drops and disappears, as voicing fades out. The fricative is practically devoiced, thus unable to manifest tone. As voicing is variable for lenis consonants in final utterance position, others samples show a little more voicing in their production. However, the pitch is not sustained, nor consistent with the vowel tone.

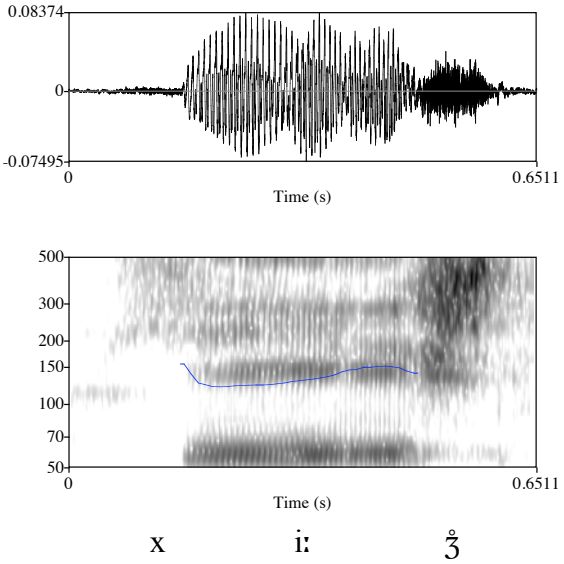

Figure 2. Waveform and spectogram of / giʒ / ʌ 'city person', by male speaker TiuR.

[3] As in previous sections, the spectogram frequency is 0-5000 Hz. (except those containing alveolar fricatives which are 0-8000 Hz.), but since this chapter concerns tone, the pitch frequency is superimposed on the range of 50-500 Hz.

[4] All the data presented in this section comes from the two male speakers mentioned above (TiuR, 50, & TiuL, 35).

4.2 Sonorants

In contrast to obstruents, sonorants are cross-linguistically voiced by default and their mode of articulation enables them to manifest pitch with ease. Sonorant consonants may even constitute syllable nuclei in many languages and bear tone on their own (e.g. Bantu languages, Hyman & Schuh 1974; Chinantec (Otomanguean), p.c. Pedro Hernández). Nevertheless, this is not the case in Quiaviní Zapotec; sonorant consonants are not syllabic, and therefore, they would not be able to bear phonological tone independently of a vowel. The question is whether, along with vowels, sonorant consonants bear contrastive tone in this language. Once again, the prosodic analysis of §3 proposes that only fortis segments are moraic in coda position. This predicts that only fortis sonorants will be capable of bearing tone, excluding lenis sonorants.

In order to test this prediction, I consider several lexical items with level and contour tones with both fortis and lenis sonorants in the coda. The stimuli contained five words with fortis sonorants in coda and five with lenis ones, making a total of 10 words for each of the tones in consideration: high, low and rising. The falling tone occurs mostly with non-modal vowels, thus, it was not considered in the stimuli in order to keep the comparison only with modal voice. Within each group of comparison, there is at least one item with a low vowel (/a/). This vowel was the basis of the comparison, with at least one item with a high vowel (/i/ or /u/). In summary, the stimuli consisted of 5 words with fortis coda sonorant + 5 words with lenis coda sonorant x 3 tones x 3 repetitions x 2 speakers, for a total of 180 tokens. Every word was produced 3 times in isolation by two male native speakers of Quiaviní Zapotec (TiuR and TiuL).

Table 3. Stimuli high tone (sonorants)

VC_{fortis}				VC_{lenis}			
/ njanˑ / ˥	→	[njanː]	‘Marcelo’	/ tan / ˥	→	[taːn]	‘Cayetana’
/ xalˑ / ˥	→	[xalː]	‘job’	/ danʲ / ˥	→	[daːnʲ]	‘harm’
/ belˑ / ˥	→	[belː]	‘Avelina’	/ bal / ˥	→	[baːl]	‘bullet’
/ nˑdenˑ / ˥	→	[ndenː]	‘this (one)’	/ nuan / ˥	→	[nuːan]	‘chirimoya’
/ n-sualˑ / ˥	→	[nsualː]	‘blue’	/ banˈgual / ˥	→	[banˈguːal]	‘old’

Table 4. Stimuli low tone (sonorants)

VC_{fortis}				VC_{lenis}			
/ galˑʲ / ˩	→	[galːʲ]	‘twenty’	/ danʲ / ˩	→	[daːnʲ]	‘mountain’
/ nalˑ / ˩	→	[nalː]	‘is hung’	/ nan / ˩	→	[naːn]	‘thick’
/ tʃonˑ / ˩	→	[tʃonː]	‘three’	/ bdan / ˩	→	[bdaːn]	‘soot’
/ nˑdenˑ / ˩	→	[ndenː]	‘that (one)’	/ bkwelˑ/ ˩	→	[bkwelː]	‘corn husk’ (totomoztle)
/ bunˑj / ˩	→	[bunːj]	‘person’	/ zinj / ˩	→	[zinːʲ]	‘spring (of water)’

Table 5. Stimuli rising tone (sonorants)

VC_{fortis}				VC_{lenis}			
/ damˑ / ˧˥	→	[damː]	‘owl’	/ manʲ / ˧˥	→	[maːnʲ]	‘animal’
/ sanˑʒ / ˧˥	→	[sanːʒ]	‘tame’	/ nan / ˧˥	→	[naːn]	‘mother’
/ kanˑ / ˧˥	→	[kanː]	‘Alejandra’	/ tʃan / ˧˥	→	[tʃaːn]	‘respectful greeting’
/ gwelˑ / ˧˥	→	[gwelː]	‘turn, chance’	/ bjol / ˩	→	[bjoːl]	‘agave flower bud’
/ tʃinˑʒ / ˧˥	→	[tʃinːʒ]	‘bedbug’	/ ngwinj / ˩	→	[ngwiːnʲ]	‘sickness’

The following sections present the results of the analysis for each tone.

4.2.1 High tone (sonorants)

I will present first the characteristics of the rhyme vowel plus fortis sonorant (VC_{fortis}). In terms of pitch, vowels expressing high tone may show an initial period of phonetic consonant perturbation (raising pitch after voiceless consonants, lowering it after voiced ones); afterwards, the pitch would be more or less stable and relatively flat. The fortis sonorant continues this tonal trajectory initiated by the vowel and maintains it during the majority of its duration. This is illustrated in Figure 3.

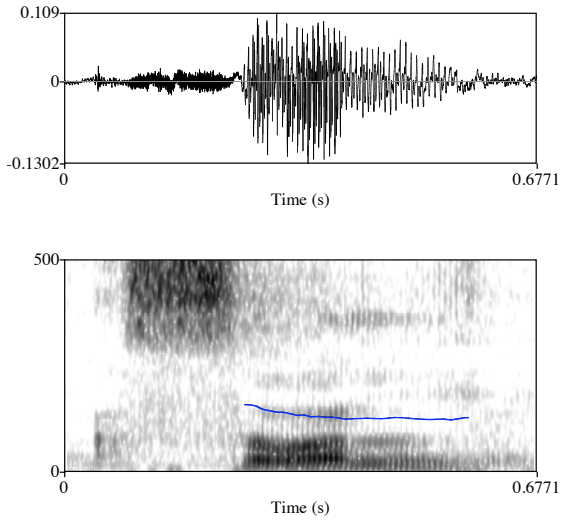

Figure 3. Waveform and spectogram of / n-sual˞ ~ n-sul˞ / ˥ ‘blue’, by male speaker TiuR.

In contrast, in rhymes formed by a vowel plus a lenis sonorant (VC_{lenis}), both the duration and the manifestation of pitch are different. Vowels are always long, whereas the lenis consonants are short. For pitch, coda consonants do not show the same solidarity with the vowel as their fortis counterparts. The most common pattern is that pitch drops in these cases.

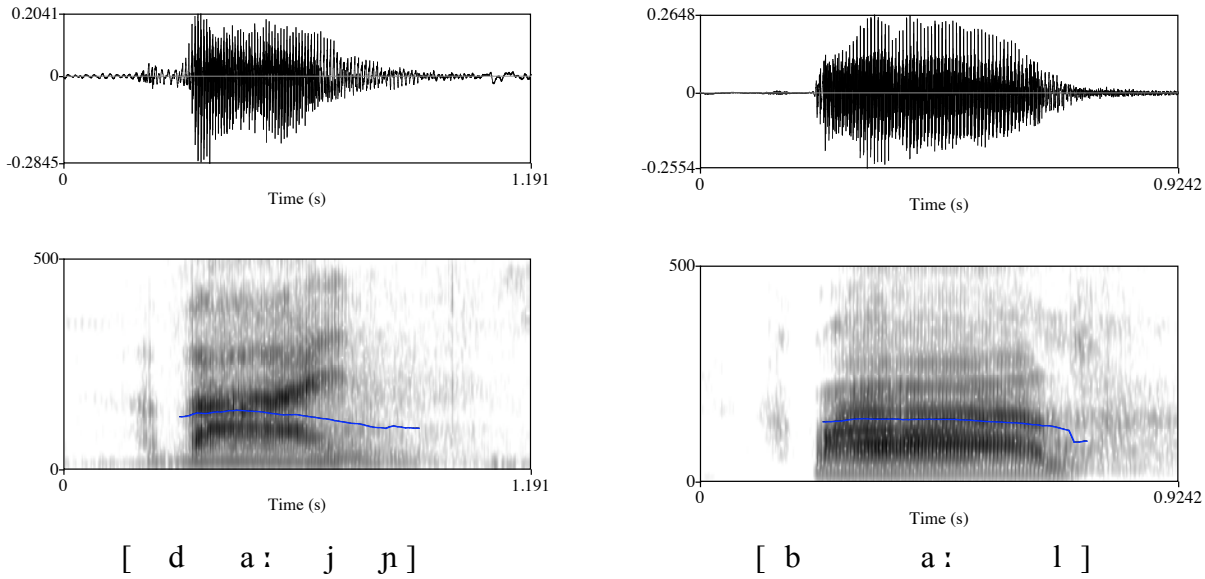

Figure 4. Waveform and spectogram of / danʲ / ˥ ‘harm’ and / bal / ˥ ‘bullet’, by male speaker TiuR.

Figure 4 shows two samples with a coda lenis sonorant. In the case of / danʲ / ˩ ‘harm’, the pitch starts to fall with the glide and continues this falling through the nasal more noticeably, along with some irregularities in the pitch curve. As the phonological tone is manifested during the steady state of the vowel, the nasal does not need to maintain a flat F0, thus, the pitch lowering is the expected trajectory in final utterance position. The case of the liquid in / bal / ˩ ‘bullet’ is even clearer in showing the role of lenis consonants. The pitch is clear and sustained during the vowel duration; the liquid continues the pitch trajectory for a few pitch periods and then it suddenly drops and voicing disappears. In summary, these examples suggest that lenis sonorants do not bear phonological tone whereas fortis do.

4.2.2 Low tone (sonorants)

With respect to low tone, let us start with a particular example (not included in the stimuli, but quite relevant). Figure 5 shows an interesting comparison between two types of rhymes in Quiaviní Zapotec, both in terms of duration and pitch. The first one is the word / nda / ˩˩ ‘sensitive’ on its own, which consists of an open syllable, hence, the rhyme is made up of a single vowel (V). The spectogram on the right corresponds to the same word plus the 3s clitic (child) / =ɨmˈ /, which forms in this case a rhyme with a vowel and a sonorant fortis (VC_{fortis}). The difference in duration is noticeable. The vowel lasts 274 ms. in the open syllable, and 89 ms. in the closed one. In the latter case, the coda compensates for the duration of the rhyme lasting 133 ms. (for a total duration of 222 ms.).

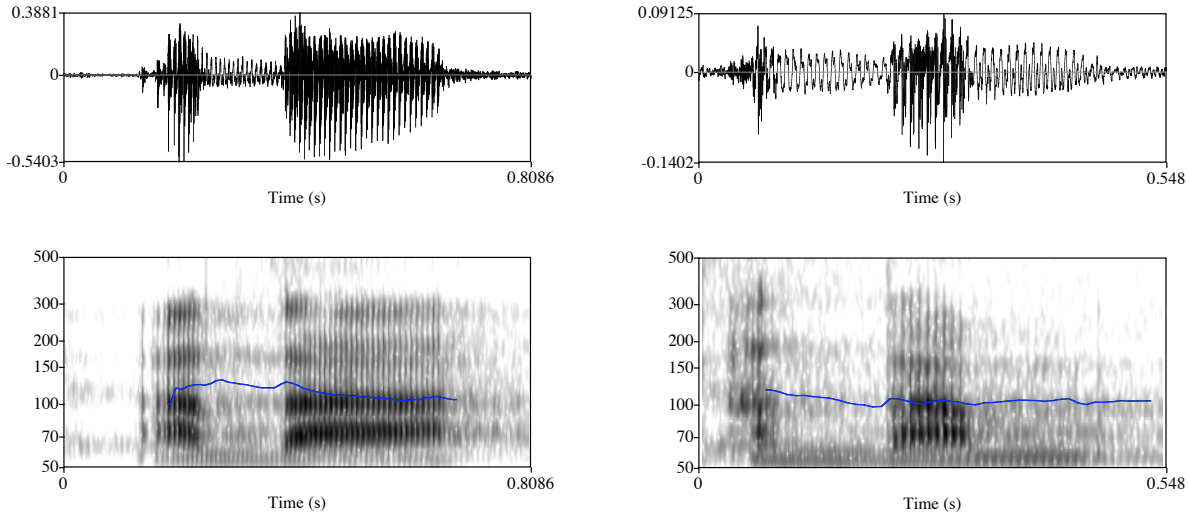

Figure 5. Waveform and spectogram of / nda / ˩˩ ‘sensitive’, by male speaker TiuL. The first one shows the word on its own, and the second example includes the 3s clitic (child) / =ɨmˈ /.

With respect to pitch, the vowel in the first spectogram expresses the low tone throughout its entire duration. Apart from the little phonetic perturbation at the beginning, the pitch is stable, averaging 110 Hz. The second spectogram suggests that tone is manifested in both the vowel and the consonant. The pitch shape initiated by the vowel consistently continues in the consonant. These characteristics exemplify the prosodic bimoraic requirement of the minimal prosodic word. In the first case, the vowel is the only segment in the rhyme, thus, it is the only prosodically active element. It is lengthened in order to satisfy

minimality and tone is expressed fully. In the second case, both the vowel and the consonant are moraic and both manifest the phonological tone. This set of examples shows the complementary distribution of vowel length: long in open syllables and before lenis consonants and short with fortis coda consonants. The latter case exemplifies the tonal behavior of fortis coda sonorants (VC_{fortis} rhyme).

For lenis sonorants, the case is the same as the one outlined above for high tone; namely, they do not show solidarity with the vowel pitch. The pitch expressed in the lenis sonorants is normally irregular and commonly drops. An example is given in Figure 6, which corresponds to the word / bdan / ˩ 'soot'. The entire pitch is located in the vowel —which last 177 ms and averages a pitch of 136 Hz— whereas the consonant shows no pitch track and lasts ~70 ms. When I plotted the pitch by hand, the result was a lowering of about 20 Hz compared to the vowel, and considerable irregularity.

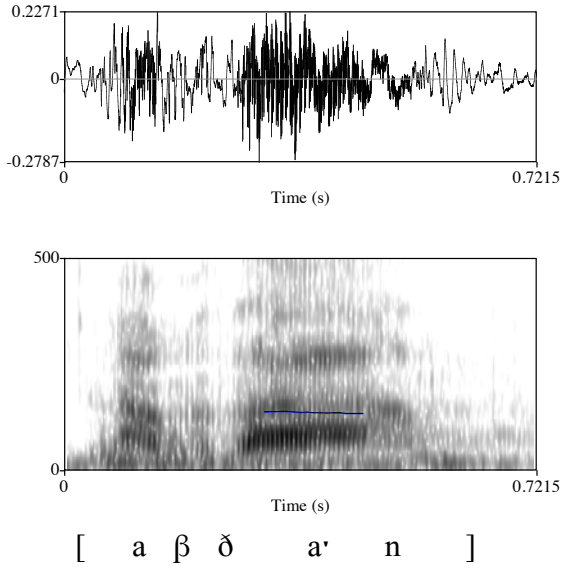

Figure 6. Waveform and spectogram of / bdan / ˩ 'soot', by male speaker TiuR.

4.2.3 Rising tone (sonorants)

The last type of tone to consider is the rising contour tone. It shows the same characteristics outlined above for the level tones with respect to sonorants in coda position. In addition, the rising contour tone adds crucial evidence to support the claim that fortis coda sonorants are the only tone-bearing consonants: these consonants continue the pitch trajectory of the preceding vowel, and often it is during their duration where the rising takes place. On the other hand, lenis sonorants normally do not show continuity with the vowel pitch.

Figure 7 provides examples of words with the vowel-fortis sonorant sequence in the rhyme. For the word on the left, / damˑ / ˥˧ 'owl', the pitch starts to rise only towards the end of the vowel, but the most noticeable rising occurs through the fortis nasal. The average pitch during the vowel portion is 108 Hz (very close to the average for low tone tokens for this speaker, 110 Hz). At the mid point of the vowel, the pitch is 106 Hz, and at the end point it has risen only to 112 Hz. From there, the nasal continues rising until 144 Hz. So, the rising during the vowel portion is too small on its own to be interpreted as a contour; it is the whole rhyme that composes the phonological tone. We observe the same characteristics for the word in the left, / tʃinˑʒ / ˥˧ 'bedbug'. The vowel has a quite flat pitch averaging 155 Hz, and only rises slightly at the end. It is during the nasal where we find a salient rise, from158 Hz to 205 Hz.

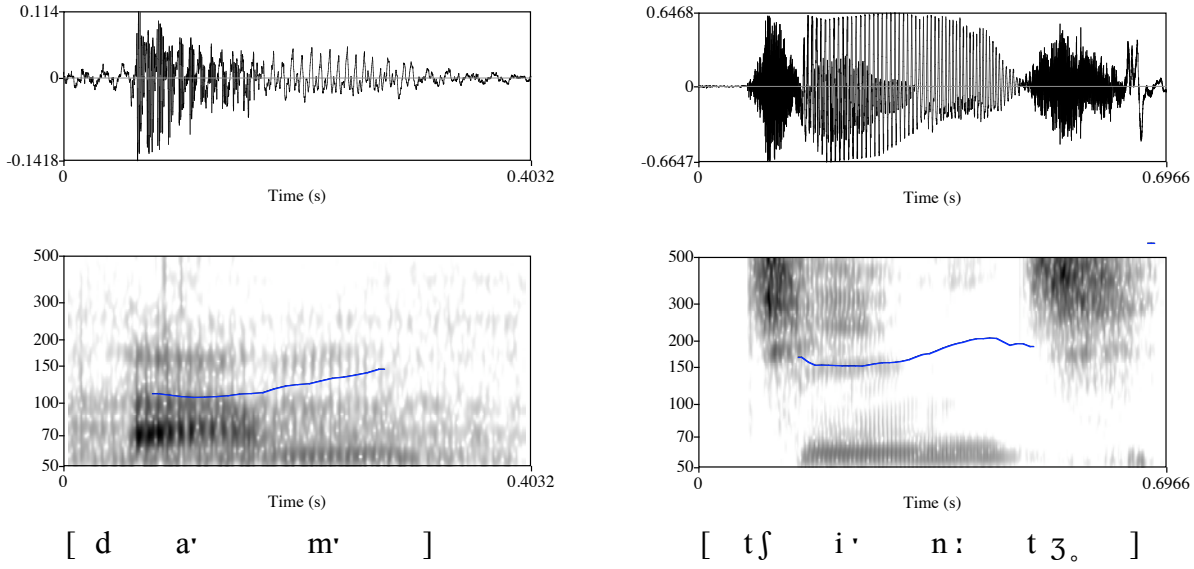

Figure 7. Waveform and spectogram of / dam˙ / ʌ ‘owl’, by male speaker TiuL. And waveform and spectogram of / tʃin˙ʒ / ʌ ‘bedbug’, by male speaker TiuR.

Following the hypothesis that fortis sonorants are the only consonants capable of bearing tone in Quiaviní Zapotec, it implies that in any other syllable without a fortis coda sonorant, only vowels will bear the tone, including contour tones. Having this consideration in mind, it seems important to compare the above case (rising tone with fortis coda sonorant) with a rhyme with a fortis obstruent to confirm that the shape of the tone is realized during the vowel production only. In the word / mes / ʌ ‘table’, in Figure 8, we observe that there is no manifestation of pitch during the long (more than 400 ms) obstruent coda. Instead, the realization of tone is entirely located during the vowel production, as predicted. Contrary to the vowel of / dam˙ / ʌ ‘owl’ in Figure 7, which practically has a flat tone, the vowel in / mes / ʌ ‘table’ shows a clear rising contour. At the beginning, there is a 34 ms flat tone of 128 Hz., and then it takes about 115ms to rise to 156 Hz.

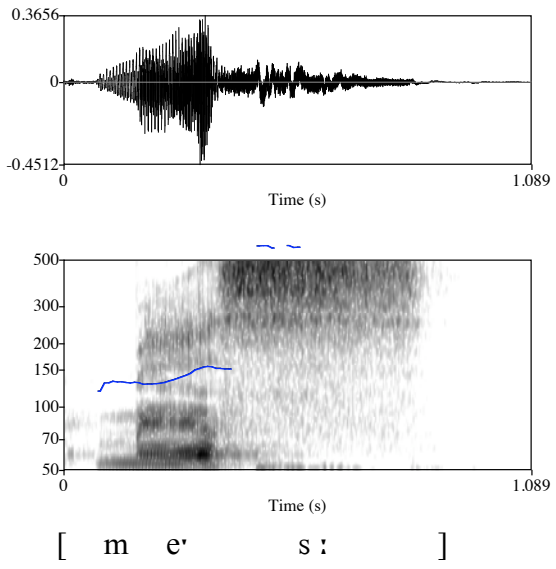

Figure 8. Waveform and spectogram of / mes / ʌ ‘table’, by male speaker TiuR.

As demonstrated for lenis consonants in coda, either obstruents or sonorants, the duration is small and the pitch is not realized in consistency with the vowel. Figure 2 above shows a lenis obstruent in coda position and its lack of solidarity with the preceding rising pitch of the vowel. Figure 9 provides additional evidence with a lenis sonorant coda, / man^{j} / ∧ 'animal', and a lenis obstruent coda, / z̬ub / 'dried corn kernel'. In both cases, the vowel is long and the contour pitch takes place during its duration, whereas during the production of the lenis coda, the trajectory of the pitch is interrupted and drops. The slope is particularly abrupt in the case of the nasal.

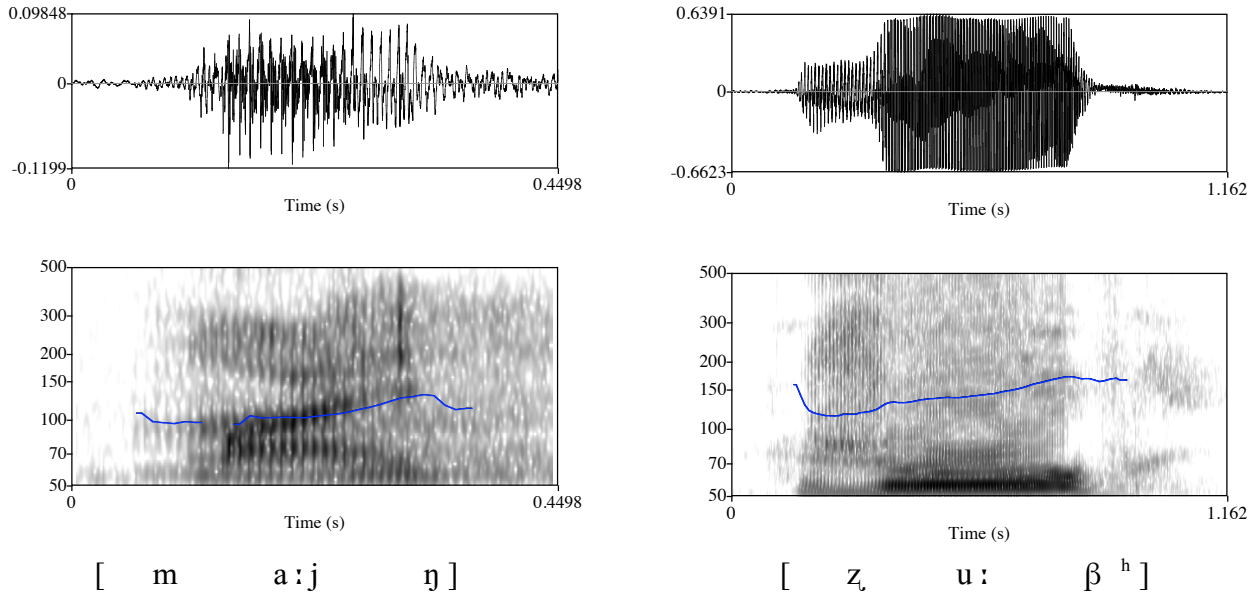

Figure 9. Waveform and spectogram of / man^{j} / ∧ 'animal', by male speaker TiuL, and waveform and spectogram of / z̬ub / ∧ 'dried corn kernel', by male speaker TiuL.

The examples in Figure 9, long vowel plus lenis coda consonant, have a similar pitch pattern to that of vowel plus fortis sonorant sequences (Figure 7), where the pitch is realized in the entire rhyme. Contrastively, the shape of the rising tone is somewhat reduced in sequences of vowel plus fortis obstruent (Figure 8). Once again, it is clear that fortis sonorants show solidarity with the vowel in the expression of tone, whereas lenis sonorants do not.

For the three tones presented in this section, it is important to say that there were some instances in which lenis sonorants continue the pitch contour started in the vowel. However, these cases are the minority and it is precisely this inconsistency that demonstrates that lenis coda consonants do not bear phonological tone in Quiaviní Zapotec.[5]

5 Discussion

The evidence presented here supports the prediction that among coda consonants only fortis sonorants, in conjunction with vowels, bear tone in Quiaviní Zapotec. Nonetheless, it is necessary to discuss some aspects of this issue. In the case of level tones, although the pitch trajectory is continued during fortis sonorants, it could be argued that the vowel on its own expresses the phonological tone, and

[5] Furthermore, when a H tone follows this lenis consonants, e.g. the 1st person clitic /-a?/, as in [z̬ŭːβáʔ] 'my corn', then the lenis shows continuancy with the phonological tone manifesting a high pitch. This proves that lenis coda consonants do not have L tone —despite of the tendency for dropping the pitch— and confirms their inconsistency in expressin tone; rather, they simply show phonetic inertia to their context.

the pitch found in the coda consonant is simple phonetic inertia. However, there are cases in which it is necessary to include the fortis sonorant as a tone-bearing unit together with the vowel. This is the case of rising contour tone, where the actual rising (or most of it) takes place during the consonant. By the same token, this confirms that the tone-bearing unit in this type of rhyme is not just the vowel, but the entire rhyme.

On the other hand, the data confirms that it is not necessary to include lenis sonorants to express the phonological tone in Quiaviní Zapotec. In the cases analyzed here, lenis sonorants are short, some of them are very weak in terms of their amplitude and formant frequencies, and practically all tend to drop the pitch. This pitch lowering is common word finally (words were recorded in isolation). If another word follows, lenis sonorants may have a different pitch shape. This inconsistency is crucial to confirm their lack of phonological tone. In the case of the level tones, the lenis sonorants rarely continue the flat or level pitch started in the vowel. In the case of rising tone, this pitch disruption is even more noticeable as the pitch lowering goes against the shape of the phonological tone. In brief, the pitch of lenis sonorants is not manipulated to express tone. In addition, vowels in open syllables and vowels with lenis codas are long and their duration is sufficient to clearly express the tone.

In terms of syllable structure, the fact that vowels and some coda consonants bear tone establishes that it is the rhyme as a whole where tone is expressed. The fact that some segments are not able to bear tone in coda is related to their specific articulatory characteristics and prosodic status. Obstruents (fortis and lenis) have a significant constriction and lack of formant structure. Lenis sonorants are normally short, sometimes devoiced and their formant structure is weak. These circumstances make it difficult, or even impossible, to achieve the necessary characteristics to express pitch. Prosodically, although fortis obstruents are claimed to be moraic (§3), they are unable to manifest pitch due to their voicelessness. As for lenis consonants, I described them as non-moraic (§3), mainly based on their short duration. Their inability to bear phonological tone demonstrated in this section provides additional evidence to this prosodic characterization.

6 Conclusion

Table 6 summarizes the phonetic characteristics of coda segment comparison in Quiaviní Zapotec, all of them apply to the different tones analyzed here.

Table 6. Phonetic characteristics of coda segments comparison in Quiaviní Zapotec

Fortis obstruents	**Lenis obstruents**
Voiceless	Inconsistent voicing
Fortis sonorants	**Lenis sonorants**
Long	Short
Continue vowel pitch trajectory	Pitch drops (tendency)
Manipulation of pitch	Lack of solidarity with vowel pitch
	Weak in amplitude and formant freq.

As illustrated, there is a split between fortis and lenis sonorant, clearly, the former present the necessary phonetic characteristics to bear phonological tone. Table 7 below shows the different types of codas in Quiaviní Zapotec and their phonological TBU status.

Table 7. Tone-bearing segments in Quiaviní Zapotec (coda position)

	Fortis	Lenis
Obstruents	X	X
Sonorants	√	X

The implications of these findings are that the feature [+son] is not enough to bear tone in Quiaviní Zapotec; the necessary conditions to do so are to be moraic (fortis) and [+sonorant]. This hierarchy is represented in the following table.

Table 8. TBU in coda in Quiaviní Zapotec

Coda type		Moraic segments		tone-bearing segments
fortis obstruent lenis obstruent	=>	**fortis** obstruent		
fortis sonorant lenis sonorant	=>	**fortis** sonorant	=>	**fortis sonorant**

In conclusion, the TBU in Quiaviní Zapotec is the sonorant mora[6]: vowels and fortis (coda) sonorants express phonological tone in this language. The present study has focused on TBU in Quiaviní Zapotec modal voice. The prediction is that the prosodic and segmental characteristics outlined in here will apply to the expression of tone in non-modal vowels.

References

Arellanes, Francisco, & Mario E. Chávez-Peón. 2009. On Moraic Typology: Syllable Weight & the Fortis-lenis distinction. Poster presentation. Phonetics and Phonology in Iberia (PaPI 2009). June 17, Las Palmas, Spain.

Chávez-Peón, Mario E. 2008. Laryngealized vowels in Quiaviní Zapotec: From phonetic realization to phonological contrast. Acoustics Week in Canada 2008 (Canadian Acoustical Association), Vancouver, October 7.

Clements, G.N. 2000. Phonology. In B. Heine & D. Nurse (eds.). African *languages: An Introduction*. Cambridge: Cambridge University Press. Pp. 123-160.

Hayes, Bruce. 1989. Compensatory lengthening in moraic phonology. *Linguistic Inquiry*, 20 (2), 253-306.

Hyman, Larry M. 1985. A Theory of Phonological Weight. Dordrecht, Holland ; Cinnaminson, U.S.A.: Foris Publications.

Jakobson, Roman. 1941/1968. Child language, aphasia and phonological universals. The Hague: Mouton.

Jiang-King, Ping. 1999. Tone-vowel Interaction in Optimality Theory. Muenchen: Lincom Europa.

Kager, René. 1999. *Optimality Theory*. Cambridge: Cambridge University Press.

Munro, Pamela & Lopez, Felipe. 1999. *Di'csyonaary x:tèe'n dìi'zh sah sann lu'uc (San Lucas Quiaviní Zapotec Dictionary)*. With O. V. Méndez, R. Garcia & M. R. Galant. Los Angeles: UCLA Chicano Studies Research Center Publications.

Pulleyblank, Douglas. 1994. Underlying mora structure. Linguistic Inquiry 25. 344-53.

Steriade, Donca. 1991. Moras and other slots. Proceedings of the Formal Linguistics Conference in the Midwest.

Yip, Moira. 2002. *Tone*. New York: Cambridge University Press .

Zec, Draga. 1988. *Sonority constraints on prosodic structure*. Ph.D. dissertation. Stanford University.

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[6] As lenis sonorants are not moraic, they are excluded as tone-bearing segments.

What drives what: A prosodic motivation for *wh*-movement

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This paper questions the traditional assumptions regarding *wh*-particles with evidence from languages such as Mandarin Chinese and Thai. In particular, this study argues that Mandarin *ne* is not a *wh*-question particle, but rather a pragmatic particle that can only occur with *wh*-questions with the effect of softening the interrogation. This study builds on four focal points of evidence that reveal that *wh*-particles in Mandarin Chinese do not possess clausal typing properties, and further, that *wh*-particles do not exist across languages. This study then moves forward by proposing a prosodic motivation as a plausible solution to this problem. In languages which have intonational downdrift, *wh*-phrases must front. In languages which have F0 variation, *wh*-phrases can remain in-situ. This empirically-based motivation aims to explain traditional differences across languages, such as the differences between multiple and single fronting languages, as well as newly proposed differences between in-situ languages.

1 Background on the syntax of *wh*-questions

Following Cheng's (1991:22) Clausal Typing Hypothesis, every clause must be typed (i.e. either declarative or interrogative). The [+wh] feature on a clausal head designates the projection of that head to be a question, and thus types the clause as interrogative.

According to Cheng (1991:22), there are two ways to type clauses as questions:

(a) fronting of a *wh*-word to the Spec of C
(b) a *wh*-particle in C

In other words, either the specifier or the head of the CP domain must be overtly marked as [wh]. In the case of (1),

(1) $[_{CP}\text{Who}_i\ [_{IP}\ t_i$ bought what]]?

it is the fronting of the *wh*-word to the Spec of CP that types the clause as interrogative through Spec-head agreement. According to Cheng, the *wh*-word *what* does not move at S-structure because the clause is already typed (marked as an interrogative clause). In the following Mandarin Chinese sentence (2), the *wh*-particle *ne* types the clause as interrogative:

(2)	qiaofeng	mai-le	shenme	ne
	Qiaofeng	buy-ASP	what	Q_{WH}
	'What did Qiaofeng buy?'			(Cheng 1991:22)

Cheng states that the in-situ *wh*-word *shenme* is similar to *what* in (2) in that it does not move because the clause is already typed as interrogative. It is important to note that these two ways to type clauses as questions are two different overt correlates of an abstract, syntactic property.

1.1 Minimalist approach to *wh*-fronting vs. *wh*-in-situ

According to Chomsky's Minimalist Program (1995), all operations follow an economy-of-derivation assumption and are driven by morphological necessity. Features must be checked in the

checking domain of a head or the derivation will crash (Chomsky 1995:199). Following the principles of the *Wh*-Criterion, *wh*-expressions move to the Specifier of CP. However, such an operation, which involves the raising of an operator to the Specifier of CP, must arise through necessity. Chomsky proposes a strong operator feature on C, against which *wh*–operators check their scopal properties.

When this operator feature Q is strong, a characteristic which is language-dependent, it must be checked before Spell-Out if the derivation is to be grammatical. This strong Q feature must be checked by a feature F_Q, which is often called the *wh*-feature (Chomsky 1995:289). The strong feature has to be satisfied by adjunction, and checked by F_Q = [wh] (Chomsky 1995:293).

Later approaches from Chomsky refine this theory by phrasing this strong feature on C[Q] as [*u*wh*], with the asterisk marking it as a strong feature, following Chomsky (2000). To deal with questions which do not bear *wh*-elements, such as yes/no questions, Adger (2003) (following Chomsky 1998, 1999, 2001) assumes that the obligatory [*u*wh*] feature on C[Q] is satisfied in a yes/no question by a null expression bearing a *wh*-feature merged directly in the specifier of CP, and this expression is a null operator notated Op (Adger 2003:353-4). Radford calls this strong feature [WH, EPP] (Radford 2004:198), following Chomsky (1998, 1999, 2001) who suggests that an [EPP] feature is the mechanism that drives movement of *wh*-expressions to spec-CP. Though both authors use different labels, they both capture the same underlying motivation that fuels *wh*-movement to spec-CP, which is the presence of a strong Q feature. The presence of this strong Q feature is in essence carrying out the same function as Cheng's (1991) clausal typing.

In this paper, there is no direct contention against the minimalist approach as the minimalist approach does not make any empirical or typological claims about what specific properties 'weak' and 'strong' languages possess to make them 'weak' or 'strong' except the labels themselves. However, as we will see in the next section, even 'weak' languages have 'strong' requirements for certain *wh*-words.

2 Shortcomings of traditional approaches

In this section, I look at the limitations of the current theories used to explain *wh*-in-situ. I will begin with *wh*-fronting and highlight problematic data that existing frameworks cannot account for. Following this, I provide syntactic evidence against the existence of the *wh*-particle in Mandarin Chinese, and expand this analysis to include all *wh*-particles in general.

2.1 Arguments against *wh*-fronting

Firstly, we will begin with an issue that is relatively well-mentioned within the literature but nevertheless still contentious - the fact that languages with *wh*-fronting are argued not to have fronting in *wh*-subject questions. Following the approach proposed by George (1980) and Chomsky (1986), among others, *wh*-subjects do not undergo movement to Spec-CP. For example, in (3):

(3) *Who* bought the car?

It is impossible to tell whether *who* remains in the TP domain or has moved to a spec-CP position as it would be phrase initial in both cases. Since it is not obvious that the *wh*-phrase has moved, it is not economical to suggest that it has – therefore the subject *wh*-phrase *who* is not considered to have moved to spec-CP, but instead remains in the TP domain. This theory has been termed the Vacuous Movement Hypothesis, and it explains that overt *wh*-movement does not occur in *wh*-subjects in English, and the *wh*-subject remains in Spec-TP. Many others such as Radford (2004) have argued for the opposing view, namely that *wh*-movement still occurs to a Spec-CP position. However, in the absence of any concrete evidence that movement does indeed take place, the Vacuous Movement Hypothesis is vastly more economical and logical. Thus, if there is indeed no movement or fronting of a *wh*-phrase to Spec-CP to 'type' the clause through Spec-head agreement, what is it exactly that renders the utterance a question?

Secondly, *wh*-in-situ languages that have been considered to be clause-typed by *wh*-particles do in fact have *wh*-phrases that undergo obligatory *wh*-fronting. Cheng (1991:20) states that 'given the presence of a *wh*-particle, *wh*-movement will not and cannot take place'. However, in Mandarin Chinese alone, we find data such as (4) which contradicts this claim:

(4a) weishenme ni mai na liang che ne
why you buy that CLS car WH
'Why did you buy that car?'

(4b) *ni mai na liang che weishenme
you buy that CLS car why
'Why did you buy that car?'

It is possible that *why* is a higher adverbial and it has been proposed by Rizzi (1990, 2001) that higher adverbials are merged directly in spec-CP under Int(errogative). However, it is important to note that there are fundamental differences here between Mandarin Chinese and Thai, and (5) illustrates that 'why' in Thai does not have to front as opposed to Mandarin Chinese:

(5) khun seu rot nan tam mai
you buy car that why
'Why did you buy that car?'

Therefore, if we consider 'why' to be base-generated lower down in the tree such as in (5), we would consider (4a) as *wh*-fronting, and subsequently the presence of the *wh*-particle should be redundant and ungrammatical since the presence of the *wh*-phrase in a spec-CP position should already type the clause as interrogative. However, *wh*-fronting and the *wh*-particle 'ne' can co-occur in (4a), which should not be grammatical since language types should only have one way of clausal typing.

Furthermore, the variation between which *wh*-phrases have to obligatorily undergo movement and which are allowed to stay in-situ are not as clear cut as laid out in the literature – both across languages (as demonstrated by the 'in-situ' languages Thai and Mandarin in examples (4) and (5)) and within languages. Regarding the *wh*-arguments such as *what* and *where* in Mandarin Chinese, it is possible to move or front the *wh*-phrase to a topic position by topicalization in (6), or to a focus position by scrambling in (7):

(6) shi shenme qiaofeng mai-le (ne)
TOP what Qiaofeng buy-ASP WH
'What did Qiaofeng buy?'

(7) Qiaofeng nali qu-le
Qiaofeng where go-ASP
'Where did Qiaofeng go?'[1]

If indeed the clause is already typed by the *wh*-particle, then it should not be possible to have any type of optional movement involving the *wh*-phrase as only *wh*-movement OR the *wh*-particle should be necessary to type the clause as interrogative.

A third and final point of evidence against the clausal typing properties of *wh*-fronting comes from Aboh and Pfau (2007), who noted that the presence of a *wh*-phrase is not a necessary condition for *wh*-questions. In languages with no *wh*-words such as Indian Sign Language and Wan, utterances are still

[1] Qiaofeng qu-le nali (Qiaofeng go-ASP where) is also grammatical.

considered as *wh*-questions. These *wh*-questions have the full interrogative force of *wh*-questions in any other language, even though they lack an overt *wh*-marker.

2.2 Arguments against *wh*-particles

2.2.1 Evidence against *wh*-particles in Mandarin Chinese

According to Cheng (1991:17), there is an overt and non-overt form of the *wh*-particle *ne* in Mandarin Chinese. From this observation alone, she extends this possibility of the existence of a non-overt form to all in-situ languages, claiming that non-overt *wh*-particles exist in languages that do not display them overtly. By arguing against the overt form of the *wh*-particle *ne* in Mandarin Chinese, I aim to show that an overt clausal-typing *wh*-particle does not even exist, much less a covert one across *wh*-in-situ languages.

This study builds on four focal points of evidence which will be outlined below, but the main purpose is to relegate *ne* to the status of a pragmatic particle that can only occur with *wh*-questions with the effect of 'softening the interrogation'.

Firstly, unlike languages such as Thai and Vietnamese, Chinese *wh*-phrases cannot gain scope over negation, even with the overt presence of the particle. In the Mandarin Chinese sentence in (8) it is impossible to get the reading of 'What didn't you do?' with regular intonation.

(8) ni mei mai shenme
you NEG buy what
* 'What didn't you buy?'

The reading of (8) above (without a rising tone on the last syllable) is 'you didn't buy anything', as the *wh*-phrase *what* is bound by the negative phrase and becomes a Negative Polarity Item (NPI) meaning 'anything'. If the rising tone is present, it becomes an echo question to the effect of 'You didn't buy what?' in Standard English, with a crucial rising contour on the *wh*-word to license (and salvage) the grammaticality of the sentence. However, like in echo questions in English, the *wh*-word is not focused; or put another way the information carried by the *wh*-phrase cannot be new.

The reading of (9) is only licensed by the sentence-final rising tone, and not by the *wh*-particle itself:

(9) ni mei mai shenme ne
you NEG buy what WH
? 'What didn't you buy?'

Again, the reading in (9) is similar to the echo reading in (8), except that there is an obligatory high tone on *ne* which makes the echo reading easier to obtain. A way to ask 'What didn't you buy?' without it being an echo-question is to raise the *wh*-phrase over the scope of negation as in (10):

(10) ni shenme mei mai (ne)
you what NEG buy WH
'What didn't you buy?'

The only way for the *wh*-word to gain scope to obtain this particular reading is by scrambling; i.e. to raise the *wh*-word over the negative phrase in the sentence in (10). By raising over the scope of negation, the *wh*-phrase is no longer bound by the negative element in the sentence and can attain a fully fledged *wh*-reading.

Secondly, the presence of the particle *ne* results in a change in the pragmatic meaning of the utterance. The phonological presence of *ne* makes the question less intrusive and direct. For example, the

sentence in (11) differs from (12) in that the former carries an accusatory tone while the latter question is less intrusive and more polite:

(11) ni zuo-le shenme
you do-ASP what
'What did you do?'

(12) ni zuo-le shenme ne
you do-ASP what WH
'What did you do?'

Similar particles with the same pragmatic function of softening the interrogation also exist across other languages such as Thai, Singaporean English and other varieties of Chinese such as Hokkien[2] .

Thirdly, the particle 'ne' itself (written in Mandarin Chinese as 呢) can actually occur without *wh*-questions, which is entirely unexpected if its function is solely to license a *wh*-question. In the example below:

(13) wo hai mei jiehun ne
I still not married PRT
'I'm still not married!'

the sentence carries an emphasis due to the presence of the 'ne' (as evidenced by the exclamation mark in the transliteration). This sentence utilizes the same orthographic 'ne' as the 'ne' used in *wh*-particles, and would be considered the same word in the dictionary. However, it is important to note that the 'ne' used here is different in that it carries a falling tone. Therefore, it is possible that the pragmatic particle 'ne' has taken on different pragmatic properties, each corresponding to a distinct tone (if you used the rising tone in the previous sentence it would be ungrammatical, and vice versa). It is thus the tone (rising or falling) and not the word or particle itself that carries the pragmatic meaning.

Fourthly, there exists similar '*wh*-particles', namely particles that can co-occur with *wh*-questions in Mandarin itself. /ja/ (transcribed as 呀)and /a/(啊) are particles that can be added on to any *wh*-question such as in (14) to increase the element of surprise:

(14) ni mai le shenme (ya/a)
you buy-ASP what ?WH
'What did you buy??'

These particles can occur in exactly the same contexts that 'ne' can, with the same propensity for optionality. If 'ne' was indeed an 'interrogative licenser', then these particles should also serve the same clausal-typing function. However, all these particles, including 'ne', appear to only change the pragmatics of the sentence, and their optionality strongly hints at the fact that they only carry an optional pragmatic sense rather than carry any grammatical function such as clausal typing. These pragmatic particles are also not common to Mandarin Chinese, and many East and Southeast Asian languages contain them as well:

(15) khun seu arai baang
you buy what PRT

[2] Curiously, all three languages have the same phonological form for the interrogation softener, which is /a/ with a low tone.

'What did you buy?' (Thai)

In (15), 'baang' is a semantic particle that signals to the listener that the questioner wants an in-depth answer, and a short answer would not be sufficient.

Therefore, from the existence of so many similar '*wh*-particles' within and across languages, it appears that 'ne' is not alone in being able to co-occur with *wh*-questions, nor is simply co-occurring with *wh*-questions a legitimate reason to assume that the particle 'types' the clause. Although the exact pragmatics of these particles is outside the scope of this paper, it is evident from the above examples that just because 'ne' can only co-occur with *wh*-questions, there is no reason to assume that 'ne' licenses the *wh*-question.

2.2.2 Evidence against *wh*-particles across languages

In the previous section, we have seen how *wh*-particles in Mandarin Chinese do not have any clausal typing properties and are merely sentence final pragmatic particles. In this section, we will continue looking at arguments against *wh*-particles in general across languages.

Firstly, assuming that all *wh*-in-situ languages contain null *wh*-particles was a logistical stretch to begin with – in Cheng's typology of in-situ languages (Cheng 1997:15), less than half of the languages (7 out of 20) possess *wh*-particles. In fact, there is no relationship between *wh*-in-situ and question particles in general (including yes-no particles). Bruening (2007:141) notes that across a typology of over 500 languages taken from Dryer (2004), there is no relationship between languages that possess question particles and have *wh*-in-situ.

Secondly, there have been claimed to be '*wh*-particles' in languages such as Tlingit and Sinhala by authors such as Cable (2007). Cheng (1991) also claims languages with particles of these type in her typology such as Hindi. However, these '*wh*-particles' are essentially different from particles that we have looked at so far in Thai and Mandarin Chinese as they are not utterance final. In fact, '*wh*-particles' in these languages appear to be scopal-particles rather than clausal typing particles. The position of these '*wh*-particles' appear to be similar to that of scopal markets in Bulgarian. Furthermore, the presence of multiple *wh*-particles make clausal typing redundant such as in (16):

(16) Aa sá waa sá kuyawsikaa?
who Q how Q said
Who said what? (Cable 2007:12)

If the presence of one Q particle types the clause as interrogative, then having two present is as redundant as having both *wh*-fronting and *wh*-particles in the same sentence.

Thirdly, negative *wh*-questions are allowed without particles in Thai and Vietnamese. Crucially, these questions do not need to be licensed by intonation as in the Mandarin Chinese utterance in (9). An example of a negative *wh*-question in which the *wh*-phrase is able to gain scope over negation is in (17):

(17) khun mai seu arai
you NEG buy what
'What didn't you buy?' (Thai)

If such negative *wh*-questions are allowed to occur without the presence of a *wh*-particle or *wh*-fronting, then it is doubtful that either contributes towards the licensing of the question.

Fourthly, in what has long been considered the prime example of an in-situ language that is licensed by a *wh*-particle, Japanese, it appears that the *wh*-particle is actually optional in spoken Japanese. For example, in (18):

(18) Kozue-san wa nani-o kaimasita ka

Kozue TOP what bought PRT
'What did Kozue buy?'

the particle 'ka' can be omitted with the provision that the final syllable 'ta' in 'Kozue-san wa nani-o kaimasita' is pronounced with a rising tone. Therefore, it is not the actual particle /ka/ itself (which carries the rise in tone) but the final sharp rise in intonation that is obligatory (Hinds 1986, Kaiser et al. 2001). In fact, the higher the pitch is of the final tone in spoken Japanese, the more querulous the question, which lends more credibility to the fact that it is the pitch and not the presence of the particle that licenses the question.

3 Proposal: Introduction

From a multitude of reasons laid out in the previous section, we have thus seen that the clausal-typing approach and such as *wh*-fronting and *wh*-particles are explanatorily inadequate. However, we still require an explanation for cross-linguistic differences between *wh*-in-situ and *wh*-fronting – we are left lacking an empirical reason for why some languages front *wh*-phrases and some leave them in-situ. Syntactic relationships and possible syntactic correlations have been explored, such the parallels between the use of *wh*-indefinites and *wh*-in-situ (Cole and Hermon 1998), but this correlation has been disproven by Bruening (2007).

Therefore, a new proposal has to look for new motivations behind *wh*-movement, perhaps beyond basic tree relationships to the prosody-syntax interface. Richards (2006) looks at the interaction between syntax and phonology, and predicts that *wh*-phrases are determined from position of complementizer and nature of mapping of syntactic structure onto prosody. However, this approach, although promising, fails to capture languages in which tone rather than intonation contributes to the prosodic boundaries, and these languages constitute the majority of in-situ languages studied in the literature. For the rest of the paper, I will present an approach that hinges on the relationship between syntax and prosody, though not in the same sense as Richards'.

3.1 Intonation and syntax

The demarcative function of prosody on syntax is universal, and languages use them in highly similar ways (Bolinger 1989: 82). The main prosodic cue that I will reference in this paper is pitch. Pitch is the auditory sensation of tonal height, and reflects the periodicity in the acoustic signal (Gussenhoven 2004: 1), and is primarily marked by F0 or fundamental frequency[3]. This is crucial as *wh*-words are always marked with a variation in fundamental frequency, and possess a contour of either a rise or fall, but falls are preferred (Ultan 1978). Languages also use pitch variation contrastively for the expression of discoursal meaning and for marking phrases (Gussenhoven 2004:22).

Wh-questions generally have the same intonation pattern as declaratives (Bolinger 1978), and different intonation from yes-no questions. Beginnings of utterances are at a relatively high F0 (Bolinger 1989), and utterances tend to fall in fundamental frequency, a phenomenon known as declination and that has been noticed as early as Pike (1945). In essence, F0 tends to decline over the course of phrases and utterances, both in tone languages and intonation languages due to falling subglottal pressure (Lieberman 1967, Collier 1975). This lower subglottal pressure will lead to slower vocal fold vibration rates and a corresponding declination in F0 (Gussenhoven 2004: 97)

There is also extra lowering at the end of the utterance, known as final lowering, shown in English by Liberman and Pierrehumbert (1984). In intonation-only languages, variation in final lowering

[3] The most powerful cue for the perception of stress is also fundamental frequency (Gussenhoven 2004:17)

is often grammaticalized; low endings mark finality, while high or mid-pitched tone realizations mark non-finality (Gussenhoven 2004: 113).

Therefore, in order for *wh*-words to attain perceptual salience, they have to be in areas where F0 is high in the utterance. In stress languages and languages that have distinct global intonation[4], F0 is higher at the beginning of the language, while in tonal languages F0 varies throughout the utterance due to F0 being utilized for lexical differentiation. A crucial point that has to be noted here is that I am not claiming that the most prominent accent in the utterance has to be on the *wh*-word, because that is not even what happens in English. In the sentences 'Where are you GOING' versus 'WHERE are you going' (where capital letters mark stress), the former pattern with the stress on the last word is the standard one (Ladd 1996:170-171). I am claiming that in languages where there is significant declination and lowering , *wh*-phrases are not able to attain the desired prosodic prominence and therefore have to move to the beginning of the utterance (where F0 is the highest) to obtain a prosodic prominence and focus.

3.2 Proposal

Since *wh*-phrases require manipulation of F0 (rise or fall), it cannot be in a prosodically non-prominent position (i.e. at the end of sentences). In languages where F0 dips towards the end of the sentence, *wh*-fronting is necessary for *wh*-phrases to move to a focus position. Conversely, in languages in which F0 varies throughout the sentence, movement of the *wh*-phrase is unnecessary and *wh*-in-situ occurs. The intonational differences (how F0 is utilized) across languages can thus explain the position of the *wh*-phrase in the same language.

4 Typology of language types

In this section, I will lay out different language types in a typology of *wh*-movement across languages. These six language types not only crucially contrast in intonation type, but also in the position of the *wh*-phrase in the sentence. This typology essentially reflects the fundamental theory that I have laid out in my proposal. Types 1 and 2 are the '*wh*-fronting' languages laid out in the literature, while Types 3 to 6 are able to have *wh*-in-situ to a varying degree. The following list is not exhaustive, but I believe that it accounts for the large majority of language types spoken throughout the world.

1. Intonational (Stress) languages with leftmost prominence (multiple *wh*-fronting languages)

F0 starts exceptionally high in utterances in these languages, crucially in differentiation from languages in type 2. The elements at the beginning of the utterances receive elevated prominence compared to the elements towards the end of the utterance. F0 lowers throughout the sentence due to downdrift. In this language type, all *wh*-phrases must move leftward to obtain focus. Examples of these languages are Bulgarian, Romanian, and Polish. One particularity of Bulgarian which distinguishes it from for example French is the fact that initial accents are as frequent as final accents (Misheva and Nikov 1998:286). This points to the fact that Bulgarian utilizes utterance initial prominence more dramatically than other languages. In Romanian, a falling pattern is used in *wh*-questions, and terminal rises are only possible with yes-no connotation (Dascalu-jinga 1998). Furthermore, in Romanian the interrogative word carries the intonation peak, usually on its stressed syllable, which leads scholars to the impression that *wh*-questions are more like statements with emphasis on the word which is in the same

[4] I will consider stress languages 'intonation languages', as they are languages that utilize intonation for prosodic and phrasal parsing (as opposed to tone languages that utilize Intonation is structural, just as lexical tone or morphological paradigms are structural (Ladd 1996)

initial position as the interrogative word in the question. In order to fulfil this utterance-initial emphasis, *wh*-phrases therefore have to move to the beginning of the sentence where F0 possesses the highest value.

2. Intonational languages with default prominence (single *wh*-fronting languages)

F0 starts high in these languages, but lowers throughout the sentence due to declination . *Wh*-phrases must move leftward in these languages to obtain prosodic prominence and focus. *Wh*-phrases in subject position that are already at the beginning of the utterance will receive prosodic prominence and thus do not have to move. *Wh*-phrases in object position will crucially have to move to obtain prominence and focus. Examples of these languages are English and German.

3. Intonational languages with rightmost prominence (optional *wh*-fronting languages)

In these languages, F0 is able to rise towards the end of the utterance due to the fact that there is utterance-final prominence. *Wh*-phrases are able to obtain F0 prominence at the end of the utterance and are thus licensed in-situ. However, they are also able to move leftward to a focus position optionally, as the beginning of the utterance also has prosodic prominence. Examples of these languages are French and Turkish.

4. Pitch accent languages (*wh*-in-situ with intonation licensing)

F0 is lexical in these languages, and therefore can be manipulated and varied throughout the utterance. However, there is less F0 variation in these languages as compared to types 5 and 6. Of importance is that utterance-final high intonation is required for question licensing in these language types. An example of this language is Japanese.

5. Tonal languages with strong intonation (*wh*-in-situ with echo-licensing)

F0 is lexical in these languages, but there exists F0 variation intonationally. Therefore, it is still possible to utilize intonation to license negative echo questions. Examples of these languages are varieties of Chinese such as Mandarin and Cantonese.

6. Tonal languages with weak intonation (*wh*-in-situ with no echo-licensing)

F0 is lexical, but very little to no F0 variation exists. In other words, these languages are not able to harness intonation for disambiguation purposes between questions and statements. Therefore, no echo questions are allowed in these languages, as echo questions are a form of intonational licensing. Examples of these languages are Thai and Vietnamese.

4.1 Applications of the typology

All language types have leftmost focus position available, but types 4 to 6 do not need to front *wh*-phrases. However, this option is available for additional emphasis, or to disambiguate over scope of negation, as seen in the previous example (10) of Mandarin Chinese. Type 1 fronts all *wh*-phrases, while type 6 leaves all *wh*-phrases in-situ with the rest in between, patterning like a continuum.

Languages differ in their use of intonation and F0. Type 1 languages like English are able to utilize F0 variation for emphasis, but not for focus. Type 3 and 4 languages like Chinese are only able to utilize F0 sentence finally, while type 5 languages are not able to vary F0 at all.

The intonational differences across languages not only predict where the *wh*-phrase in the sentence is, but also predicts what kind of echo question is possible in the language. In this prosodic account for *wh*-phrases, echo questions are strategies to place emphasis on *wh*-phrases that are in non-

prosodically prominent positions. However, these intonationally emphasized *wh*-phrases crucially differ from *wh*-phrases in focalized and prosodically prominent positions in that they have to refer to old information.

In Type 1, since all *wh*-phrases are fronted, it is possible to emphasize a *wh*-phrase in multiple *wh*-questions that would not otherwise get prominence through intonational licensing such as in the following example from Bulgarian:

(19) Koy kogo vizhda
who whom sees
'Who sees whom?'

In this sentence, the first *wh*-phrase is the one that obtains the focus (and is also correspondingly higher up in the sentence where F0 is highest). However, it is possible to utilize intonation to place emphasis on the second *wh*-phrase, koy *kogo* vizhda. This is a way that intonation can be used for emphasis in Type 1 languages that is unique to that type, since it is the only type that has multiple fronted *wh*-phrases (it is also possible for Type 1 to have the same echo questions as Type 2 below). In Type 2 languages, intonation is also used for emphasis in echo questions in English such as 'You bought what?' to bring attention to and license a *wh*-phrase that would not otherwise get prominence in the utterance. In Type 3 languages, final rising intonation is not used for licensing echo questions but *wh*-questions utterance-finally. Type 4 languages utilize final rising intonation to license questions in general. Type 5 languages are able to utilize final rising intonation to disambiguate negative echo-questions, while Type 6 languages are not able to utilize intonation at all.

5 Conclusions

The proposal that I have laid out so far is preferable to existing frameworks of *wh*-phrases due to a wide array of reasons previously mentioned and further laid out and recapitulated below. Firstly, the current account is empirically motivated, as it deals with and correlates with fundamental frequency values. These values also have very real practical applications as elements with higher pitch in the utterance are more perceptually salient and provide acoustic information to the listener as to how to parse the utterance. Furthermore, this straightforward approach is entirely falsifiable. If there exists an example of a non-rightmost stress language that allows *wh*-in-situ or a tone language that possesses obligatory *wh*-fronting, then my account loses its credibility.

Secondly, this approach has wide explanatory scope strength, applicable to perhaps more scenarios than I have drawn up in this paper. On the broadest level, it allows us to account for why languages behave the way they do cross-linguistically in regard to *wh*-phrase position. This approach also accounts for a wide variety of differences between language types that have been accounted for, such as the differences between single and multiple-fronting language types, attributing the differences to differences in intonation. This account also takes into consideration differences between in-situ languages not previously explored, such as the difference in wh-phrases that can be fronted between Chinese and Thai. It also takes into account that languages have different ways of focusing a wh-phrase, and accounts for the fact that even within a language; it is possible to have variability in where the wh-phrase can be located. This approach also neatly and elegantly accounts for correlations in language properties such as the fact that all tone languages are in-situ, and most stress languages employ wh-fronting.

On a smaller scale, this theory allows us to account for various *wh*-phenomena across languages, such as *wh*-subjects (wh-subjects do not have to move since they already receive prosodic prominence) and echo questions (intonational strategies across languages to give emphasis to *wh*-phrases in non-prosodically prominent positions).

To summarize, due to failings of current theory and typology to adequately account for the intricate differences between *wh*-fronting and *wh*-in-situ between languages, a new motivation is necessary. In languages which have intonational downdrift, *wh*-phrases must front. In languages which

have F0 variation, *wh*-phrases can remain in-situ. The current theory, though in its nascent stages, has wide explanatory scope and application and is able to account for various phenomena and differences between languages. More languages and data would have to be examined to test for the predictability of this theory, which will be examined in the following and last section.

There are areas that this paper has not adequately addressed and that should be dealt with in future research. Firstly, the question of scope has been addressed in this paper, but not fully and adequately dealt with. For example, no answer has been given as to why the *wh*-phrase can scope over a negative phrase in Thai and Vietnamese but not in Mandarin Chinese. Further questions that have to do with scope are why languages such as Hungarian can have partial *wh*-movement – do the leftmost *wh*-phrases in partial *wh*-movement attain prominence so that the listener is alerted of a linked *wh*-phrase in the same utterance? An overarching and unitary theory of *wh*-motivation will have to address these scopal issues.

Secondly, it is essential to find a more concrete link between intonation and the types of *wh*-words that have to be fronted (arguments vs. adjuncts). The issue has been explored in this paper (the fact that Thai can have 'why' in-situ but not Mandarin Chinese) but has not been fully accounted for.

References

Aboh, E.O. and Roland Pfau (2006). What's a wh-word got to do with it? In *The Cartography of CP*. Benincà, P. & N. Munaro eds., New York : Oxford University Press

Adger, David (2003). *Core Syntax: A Minimalist Approach*. Oxford University Press.

Bolinger, D. L. (1978) Intonation across languages. In J.P. Greenberg, C.A. Ferguson, and E.A. Moravcsik (eds.), *Universals of human language. Volume 2: Phonology.* Stanford University Press

Bolinger, D.L. (1989) Intonation and its uses. Stanford University Press.

Bruening, Benjamin (2007). Wh-in-Situ Does Not Correlate with Wh-Indefinites or Question Particles. *Linguistic Inquiry* 38: 139-166.

Cable, Seth (2007). *The Grammar of Q: Q-Particles and the Nature of Wh-Fronting, As Revealed by the Wh-Questions of Tlingit*. Doctoral dissertation, MIT.

Cheng, Lisa (1991). *On the Typology of Wh-Questions*. Doctoral dissertation, MIT, Cambridge, Mass.

Cheng, Lisa (1997). *On the Typology of Wh-Questions*. New York and London: Garland Publishing.

Chomsky, Noam (1986). *Barriers.* Cambridge: MIT Press.

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

Chomsky, Noam (1998). Minimalist Inquiries: the Framework. *MIT Occasional Papers in Linguistics 15*, Cambridge: MIT Press.

Chomsky, Noam (1999). *Derivation by phase* (ms.). Cambridge: MIT Press.

Chomsky, Noam (2000). *Minimalist Inquiries: The Framework*. Cambridge: MIT Press.

Cole, Peter, and Gabriella Hermon (1998). The typology of *wh*-movement: *Wh*-questions in Malay. *Syntax* 1:221–258.

Collier, R. (1975). Physiological correlates of intonation patterns. *Journal of the Acoustic Society of America* 58, 249-255.

Dryer, Matthew S. (2004). Typological database. Available at linguistics.buffalo.edu/people/faculty/dryer/ dryer/database.

George, L. (1980). *Analogical generalization in natural language syntax*. Doctoral dissertation. Cambridge: MIT Press.

Gussenhoven, Carlos (2004). *The Phonology of Tone and Intonation*. Cambridge University Press.

Hinds, John (1986). *Japanese*. London: Croon Helm.

Kaiser, Stefan, Yasuko Ichikawa, Noriko Kobayashi and Hilofumi Yamamoto (2001). *Japanese: A Comprehensive Grammar*. London: Routledge.

Ladd, D.R. (1996). *Intonational Phonology*. Cambridge University Press.

Laurentia Dascalu-jinga (1998). Intonation in Romanian. In Hirst, Daniel and Albert Di Cristo (eds.) *Intonation Systems: A Survey of Twenty Languages*, pp. 239-260. Cambridge University Press.
Lieberman, P. (1967). *Intonation, Perception, and Language*. Cambridge, MA: MIT Press.
Liberman, M. and J. Pierrehumbert (1984). Intonational invariance under changes in pitch range and length. In M. Aronoff and R.T.Oehrle (eds.), *Language and Sound Structure*, pp. 157-233. Cambridge, MA and London: MIT Press.
Misheva, Anastasia and Michel Nikov (1998). Intonation in Bulgarian. In Hirst, Daniel and Albert Di Cristo (eds.) *Intonation Systems: A Survey of Twenty Languages*, pp. 275-287. Cambridge University Press.
Pike, Kenneth L. (1945). *The intonation of American English.* Ann Arbor: University of Michigan Press.
Radford, A. (2004). *Minimalist Syntax: Exploring the structure of English*. Cambridge: Cambridge University Press.
Richards, Norvin (2006). *Beyond Strength and Weakness*. Ms., MIT.
Rizzi, L. (1990). *Relativized Minimality*, Cambridge: MIT Press.
Rizzi, L. (2001). On the position 'Int(errogative)' in the left periphery of the clause. In Cinque, G. and Salvi, G. (eds.) *Current Studies in Italian Linguistics*, 287-296. Elsevier.
Ultan, R. (1978). Some general characteristics of interrogative systems. In J.P. Greenberg, C.A. Ferguson, and E.A. Moravcsik (eds.), *Universals of human language. Volume 4: Syntax*. Stanford University Press

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The production of three-member codas by native speakers of English; an erroneous target?

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This research examines NS production of three member consonant (CCC) clusters in the coda position to discover whether modifications occurred which reflect those reported as errors in previous Second Language Acquisition (SLA) studies. Such a state of affairs would be problematic in that it would seem the 'target' form for non-native speakers is in fact the underlying form for native speakers, and as such, is rarely actually produced in natural speech. Two participants performed three tasks - the reading of a short story, a question and answer session, and the reading of a word list - to provide varying degrees of "carefulness" or formality in the speech of the participants. This study had some consequential findings that warrant further investigation; several of the same cluster types that were simplified in L2 studies (and reported as errors) were also simplified very regularly by the NSs in this study.

1 Introduction

Central to second language acquisition (SLA) studies on production is the sorting of production into two broad categories: (i) accurate and (ii) inaccurate. The first category is also often described with the terms 'native-like' or 'target-like', the former being perhaps the most precise term in that it expresses directly what the measure for 'correct' or 'target-like' is. Essentially, a form goes into the first category if it is produced in the way a native speaker (NS) would produce it, and it goes in the second category if it is not. Of course, the second category may be divided into any number of 'error-type' sub-categories depending on the purposes of the researcher. Setting aside the controversy surrounding the concept of native-speaker expertise[1], this paper is concerned with whether the "native-like" ideal employed by SLA researchers is descriptive in that it accurately reflects the forms most NSs produce most of the time.

NSs of English, like those of any language, modify underlying forms according to certain phonological rules (or constraint rankings, depending on one's theoretical perspective), but it appears that it is the underlying form, and not the surface form, that is cited in some SLA studies as the target form. Hansen (2001), which examined L2 production of English three-member consonant clusters (CCC), is a rare case in that it considers that the modifications made by non-native participants in some instances may be due to "natural phonological processes." (p.356) In their treatment of certain complex codas, the participants were showing absence[2] patterns that were also "common among native speakers of English." (p. 356) The production exhibiting these patterns was nevertheless counted as inaccurate, which raises a question: Would the same production by NSs be "inaccurate" as well? Considering that "accurate" is taken to mean "native-like", this line of thinking leads one to the logically incoherent conclusion that NSs commonly produce non-native-like forms.

This study examines NS production of English CCC codas in three styles: Word list reading, passage reading and semi-free conversation. It is limited in scope and should be considered preliminary in nature, part of more extensive work that would focus on both L1 and L2 production and larger data sets. The purpose of the present study is to determine if regular patterns of cluster-simplification[3] emerge in L1 production that would be considered inaccurate by the standards of previous work on L2 production.

[1] For in-depth discussions on this topic, see Rampton, B. (1990) and Leung, C. et al (1997)
[2] "Absence" refers to absence of one of the cluster members. Hansen uses this term instead of "deletion", however these terms may be used interchangeably here as the theoretical distinction between the two is inconsequential to this study.
[3] "Simplification" of a consonant cluster by NSs usually involves the deletion of one of its members (Kreidler, 1989).

Results showing this to be the case would be important in that it would force us to reexamine what we consider "accurate production".

2 Background

2.1 L1 Production

The simplification of English complex codas in L1 production is a well-known phenomenon. In the literature, however, it is rarely described in terms of a formal phonological process, but as a variant process found in the casual speech of most NSs This involves a distinction between 'careful' and 'conversational' speech (Shockey, 2003). In careful speech, NSs will often produce the citation form of a word (the prescribed, standard pronunciation found in dictionaries), whereas in conversational speech all sorts of alterations may occur. This citation form is historically determined and may involve a deletion, as seen in words such as *castle* and *Christmas*; in both cases the option to pronounce the /t/ is no longer available, even in the most formal speech (Shockey, 2003). On the other hand, the simplified form of a word like *acts* after /t/ deletion, [æks], is considered a casual variation because the unreduced form [ækts] is also available and may surface in careful speech. This study is concerned with the type of simplification found in words like *acts,* and not *Christmas*.

Three member (CCC) codas are relatively rare in English and are mostly a result of the suffixation of inflectional morphology to roots ending in two-member codas, e.g. *cults, mixed.* CCC codas are known to undergo a higher rate of reduction than CC codas (Guy, 1980), and among the CCC codas the most commonly reduced types are shown in (1) – (4) below, along with their surface forms.

(1) /kts/ ⇒ [ks] 'products'
(2) /kst/ ⇒ [ks] 'next'
(Cruttenden, 2001)

(3) /skt/ ⇒ [st] 'asked
(4) /ndz/ ⇒ [nz] 'ends'
(Kreidler. 1989)

It is worth noting the interesting asymmetry of /nts/ vs. /ns/ and /ndz/ vs. /nz/. In the case of /nts/ and /ns/, some speakers contrast the two and others do not. For some speakers, *prints* and *prince* both surface as [prInts], while others make a differentiation by producing 'prince' as [prɪns]. This means that many speakers epenthesize /t/ into a /ns/ cluster. The voiced counterpart, on the other hand, if simplified, involves deletion; i.e., if *men's* and *mends* are pronounced the same, it will be as [m□nz] (Kreidler, 1989). The patterns described above occur widely in most varieties of English; for discussions of more dialect-specific processes, see Labov, 1969; Shockey, 2003.

2.2 L2 production

There has been an abundance of studies dealing with L2 production of English consonant clusters, but relatively few looking at simplification of CCC codas, specifically. Many studies have dealt only with the production of complex onsets (Broselow and Finer 1991; Carlisle 1998, 1999; Chan 2006; Lin 2001), while others investigated two-member codas but not three-member codas (Hancin-Bhatt and Bhatt 1997; Major 1999). Discussed below are a number of studies that have looked at CCC codas, all of them reporting relatively high rates of deletion. Deletion is of particular interest because it is in these cases that L2 production may in fact be the same as L1 production.

Hansen (2001) looked at linguistic constraints on Mandarin Chinese speakers' production of English complex codas, finding 3-member clusters to have the highest modification rate, with deletion as the favoured simplification strategy. Along with Hansen (2004), this is the only work to break down the results in terms of cluster type. Hansen found deletion/absence to be by far the most common

simplification strategy for CCC clusters reporting the following rates of absence as a percentage of total production:

(5)	*fricative-stop-stop*	/skt/	100%
(6)	*nasal-stop(voice)-fricative(voice)*	/ndz/	33%

Note that the cluster types in (5) and (6) were discussed above as (3) and (4) in terms of NS production. As there is no mention of specifically which member is absent, we are left to speculate as to what the produced form looked like. Hansen (2004), a longitudinal study, analyzed data taken from Vietnamese participants at three different times. Over all of these times, at least 85.7% of the three-member codas produced involved absence. This time, the cluster type seen in (6) underwent deletion 100% of the time, surfacing as "…either [n] or [nz]". (p. 109)

Several other studies found deletion to be the most commonly used simplification strategy in L2 production of consonant clusters. Anderson (1987) studied English consonant cluster production by NSs of Arabic and two dialects of Chinese (Mandarin and Amoy) and found deletion rates for three-member codas to be 16.7%, while Hancin-Bhatt's (2000) analysis of Thai speakers' production reported deletion rates of 30% for CCC codas. Yoo (2004) also found deletion to be the most popular simplification strategy for CCC codas.

3 This study

3.1 Participants

Two participants were chosen for this study. The first participant, hereafter referred to as *Part. 1*, is a 31 year-old female. Participant 2 (*Part. 2*) is a 33 year-old male. They are both Canadian NSs of English with no linguistic training.

3.2 Tasks

Three tasks were performed for this experiment by both participants, together, in the same sitting. The session was recorded in a quiet room as one continuous file on a Sony ICD-SX700D digital voice recorder. The tasks consisted of the reading of a short story, followed by a question and answer (Q & A) session, and finally the reading of a word list (see appendices for materials). Part. 1 read the story aloud to Part. 2, then asked Part. 2 a series of questions (provided by me) based on the story, to which Part. 2 was told to give complete-sentence answers. The story and the questions contained words with a variety of CCC codas (see Table 1). These tasks were chosen to provide varying degrees of "carefulness" or formality in the speech of the participants. The reading of word lists (unconnected words) has been shown to produce the most formal forms, followed by the reading of a passage, followed by free conversation, in descending order. (Labov, 1966; Trudgill, 1983) More formal speech is characterized by conscious attention to form, while less formal speech is characterized by attention to content. CCC clusters being relatively rare in English, truly free conversation was unfeasible for a study of limited scope such as this. The Q & A session was designed to promote "semi-free" production, at least for Part. 2, who was providing unscripted answers. Under the impression they were engaging in a reading comprehension exercise, the participants would presumably be less careful in their pronunciation. Thus, it could be predicted that there would be fewer cluster-simplifications in the wordlist reading than the other tasks.

3.3 Items

Words containing 19 different cluster types were produced over the three tasks. They are listed below in Table 1.

Table 1: *Clusters Produced in this Study*

Nasal-Fricative-Stop	/nst/ , /ŋst/
Nasal-Fricative-Fricative	/mfs/
Nasal-Stop-Fricative	/nts/ , /ndz/
Nasal-Stop-Stop	/mpt/
Liquid-Fricative-Stop	/rst/
Liquid-Fricative-Fricative	/rfs/
Liquid-Nasal-Fricative	/rnz/ , /rmz/
Liquid-Nasal-Stop	/rnt/ , /rnd/
Liquid-Stop-Fricative	/lps/
Fricative-Stop-Fricative	/fts/ , /sts/
Fricative-Stop-Stop	/skt/
Stop-Fricative-Stop	/kst/ , /dst/
Stop-Fricative-Stop	/kts/

3.4 Predictions

Based on previous work on L1 production it can be predicted that four cluster types will be targeted for simplification: /ndz/, /skt/, /kst/, /kts/. One would also expect to see less deletion occurring in the wordlist task than the other tasks.

4 Results

There were a total of 65 tokens produced by both participants across all tasks, and a total of 24 of these were simplified. The 19 CCC coda types were not evenly represented across the tasks, however, and therefore one cannot read too much into this. Of the 19 cluster types, 5 were simplified by one or both of the participants at least once. The remaining 14 surfaced unaltered every time. Three of these cluster types were predicted as targets: /ndz/, /skt/ , /kts/. The remaining two were: /sts/ and /fts/. The coda type /kst/ was predicted to surface simplified, but did not. The remaining 14 cluster types surfaced unaltered every time.

Tables 2 and 3 illustrate the production of Parts.1 and 2, respectively. Only the 5 cluster types that were simplified at least once by either participant are represented in the tables. The simplified surface form is also shown, indicating which member was deleted for each type. The fractions represent the number of clusters simplified over the total number produced. For example, Part 1's 6/6 total for /ndz/ means that the simplified form, [nz], was produced every time. *NA* indicates that no token was produced.

Table 2: *Participant 1 Production*

	Word List	Reading	Q & A	Total
Nasal-Stop-Fricative				
/ndz/ ⇒ [nz]	1/1	3/3	2/2	6/6 (100%)
Fricative-Stop-Fricative				
/fts/ ⇒ [fs]	0/1	1/1	NA	1/2 (50%)
/sts/ ⇒ [s:]	0/1	1/1	NA	1/2 (50%)

Fricative-Stop-Stop				
/skt/ ⇒ [skt]	0/1	2/2	NA	2/3 (66.7%)
Stop-Stop-Fricative				
/kts/ ⇒ [ks]	1/1	2/2	2/2	5/5 (100%)
Totals	2/5 (40%)	9/9 (100%)	4/4 (100%)	15/18 (83.3%)

Only Part. 1 performed the passage-reading task, and thus produced more tokens than Part. 2, overall. No statistical analysis was performed on these results due to the small number of tokens in this study. Two clear differences emerge in the production of the two participants, however. First, Participant 1 showed a tendency not to simplify in the wordlist task; /fts/, /sts/ and /skt/ codas, which were simplified every time on other tasks, were produced unaltered in the wordlist task. Part. 2 was entirely consistent across all tasks. The second difference is that Part. 2 never simplified the /sts/ cluster, whereas Part. 2 did so in the reading task.

Table 3: *Participant 2 Production*

	Word List	Reading	Q & A	Total
Nasal-Stop-Fricative				
/ndz/ ⇒ [nz]	1/1	NA	2/2	3/3 (100%)
Fricative-Stop-Fricative				
/fts/ ⇒ [fs]	1/1	NA	1/1	2/2 (100%)
/sts/ ⇒ [s:]	0/1	NA	0/1	0/2 (0%)
Fricative-Stop-Stop				
/skt/ ⇒ [st]	1/1	NA	NA	1/1 (100%)
Stop-Stop-Fricative				
/kts/ ⇒ [ks]	1/1	NA	2/2	3/3 (100%)
Total	(4/5) 80%	NA	(5/6) 83.3%	9/11 (82.9%)

There was one coda that was consistently modified, but not listed in the tables because it is not a straightforward case of deletion. The cluster /nθs/, as in *months*, surfaced in every case as [nts]. This

modification is slightly complicated by the fact that, as discussed above in section 2.1, many NSs do not contrast /nts/ and /ns/. Therefore, it is not entirely clear whether this is a case of deletion followed by epenthesis:

(7) /nθs/ ⇒ /ns/ ® [nts]

It could also be a case of the interdental /θ/ assimilating to the alveolars around it:

(8) /nθs/ ⇒ [nts]

5 Discussion

The results validated our predictions in some cases. Three of the four clusters that were predicted as simplification candidates (/skt/, /kts/ and /ndz/) were simplified by the participants most of the time. It is also notable how regular the participants' production was. They only simplified 5 of the 19 cluster types, but these 5 cluster types were simplified more than 80% of the time. Part. 1 exemplified this by simplifying only 4 of the cluster types, but simplifying those 100% of the time. These simplifications are clearly not mistakes or rare instances of lazy speech, rather they appear to represent natural production, for these speakers at least. These findings have interesting implications for L2 studies. Recall Hansen (2001) which reported 100% and 33% error (absence) rates for /skt/ and /ndz/ codas, respectively. These "errors" were quite possibly the same simplifications made by the NS participants in this study, and therefore not errors at all. The same can be said for all of the L2 studies discussed above in section 2.2 which reported high instances of deletion among CCC codas.

5.1 Style and gender

Style appeared to be a factor for Part. 1, who produced unsimplified forms for 3 out of 5 of the clusters in the most formal task – the wordlist task. Part. 2, on the other hand, produced the same forms in the wordlist task as the Q & A task. Gender has also been shown to be a factor in pronunciation studies showing that females generally produce more 'prestigious' forms than males (Coates 1993; Labov 1966; Trudgill 1974). 'Prestigious' or 'formal' speech is characterized by careful production, which, in the context of this study, would result in unsimplified codas. This may have been a factor in Part. 1's attention to formality discussed above. However, a larger study involving more tokens and statistical analysis of the results would be necessary to determine conclusively whether style and gender are factors.

5.2 Environment

Environment is an important factor in determining whether simplification of complex codas occur, especially two-member codas (Shockey 2003). Final stops are routinely deleted when they are followed by a consonant:

(9)	'hand me (a nut)'	/hændmi/	⇒	[hænmi]
(10)	'last season'	/læstsizən/	⇒	[læs:izən]

This may be less the case with CCC codas, which are usually formed by morpheme suffixation. Deleting the final stop in these cases means removing a discreet morpheme that conveys valuable information, making an utterance ambiguous or ungrammatical. Consider the following hypothetical utterances:

(11)	'ask me'	/æskmi/	⇒	[æsmi]
(12)	'asked me'	/æsktmi/	⇒	[æstmi]

In (11), the final stop /k/ may be deleted due to its preconsonantal position. The CCC cluster in (12), on the other hand, does not lose its final member, /t/, but its medial member, /k/. It may be deemed necessary

to preserve /t/ because it is necessary to convey tense. Evidence in the data of this study that environment is less important for CCC clusters is the fact that the participants both simplified clusters in the wordlist task in which environment is not a factor. In fact, Part. 2 simplified clusters in the wordlist at the same rate as in the Q & A task, which involved connected speech.

Given these facts, one may conclude that the simplification of certain CCC clusters appears to have more to do with the internal phonotactics of the cluster itself than environment. That is not to say, however, that environment is not a factor at all. A more comprehensive study of CCC coda production looking at spontaneous speech may find more instances of environment-related deletion.

5.3 Conclusion

In conclusion, I would like to propose where this research can go. This study has shown that NSs exhibit predictable patterns of CCC coda simplification. This is the first step in a larger research plan with the purpose of investigating where L1 and L2 production overlap in their simplification of CCC codas, and for that purpose a larger study involving both NSs and NNSs would be necessary. A more comprehensive investigation of L1 production would provide a clearer picture of exactly what 'target-like' production truly looks like in a variety of contexts. An investigation of L2 production would fill the gap in existing research and reveal which L2 simplifications are 'native-like'. There is, of course, the interesting question of whether L2 simplification that is 'native-like' would indicate true acquisition or whether it is merely a fluke; these simplified forms may ultimately be due to L1 transfer or developmental factors and not the product of the same phonological processes that govern the speech of NS of English. In any case, production that is 'native-like' should not only be considered 'accurate', it should be encouraged.

Appendices

Appendix A: Reading Passage (*Participants' version had no underlining*)

Once upon a time, in the forests of the Alps, there lived a dwarf, an elf and two nymphs. These three friends enjoyed lounging peacefully amidst the pines, entranced by the lonesome song of the Whippoorwill. "How old is the dwarf?" asked the elf one day. "He turns twenty-one in two months" replied the first nymph. "Yeah, but he acts like he turns two in twenty-one months", interjects nymph 2. They all thought this to be both funny and true and great whoops of laughter ensued. The dwarf, however, failed to see the humour in it. He had just returned from a hunting trip early and heard everything. Suitably incensed, he grabbed nymph 2 and munched on his head. Full of shame at what he had just done, the dwarf ran off too eat burnt worms and make crafts with his fat little hands. A few months later, after the nymph's head had healed, the elf and nymphs had a talk and decided to make friends again with the dwarf. "I don't like how he reacts to our jokes, but he hunts for us and protects us against all the bad elements in our forest. He has risked his life for us more than once." said the elf. They all agreed and the dwarf was invited back to live with them amongst the pines.

Appendix B: Questions

1.) Q: Where did the three friends live?
A: The three friends lived in the forests of the Alps.
2.) Q: What did the dwarf do to nymph 2?
A: The dwarf munched on his head.
3.) Q: What did the dwarf eat when he ran away?
A: The dwarf ate burnt worms.
4.) Q: What did the dwarf make when he ran away?
A: The dwarf made crafts.
5.) Q: What are the dwarf's hands like?

A: *The dwarf's hands are fat (and little).*

6.) Q: Who said "I don't like how he reacts to our jokes"?

A: *The elf said "I don't like how he reacts to our jokes".*

7.) Q: Who protects the others from bad elements?

A: *The dwarf protects the others from bad elements.*

Appendix C: Word List

1.)	drafts	6.)	vests
2.)	alms	7.)	hearts
3.)	Banff's	8.)	whisked
5.)	blends	9.)	mixed
4.)	ants	10.)	inflects

References

Anderson, J. (1987). The markedness differential hypothesis and syllable structure difficulty. In G. Ioup, & S. Weinberger (Eds.), *Interlanguage Phonology: The acquisition of a second language sound system* (pp. 279–291) Cambridge, MA: Newbury House.

Broselow, E., & Finer, D. (1991). Parameter setting in second language phonology and syntax. *Second Language Research, 7*(1), 35.

Carlisle, R. (1998). The acquisition of onsets in a markedness relationship. *Studies in Second Language Acquisition, 20*(02), 245-260.

Carlisle, R. (1999). The modification of onsets in a markedness relationship: Testing the interlanguage structural conformity hypothesis. *Language learning, 49*, 59-93.

Chan, A. Y. W. (2006). Strategies used by Cantonese speakers in pronouncing English initial consonant clusters: Insights into the interlanguage phonology of Cantonese ESL learners in Hong Kong. *IRAL: International Review of Applied Linguistics in Language Teaching, 44*(4), 331-355.

Coates, J. (1993). *Women, men, and language,* New York: Longman.

Cruttenden, A. (2001) *Gimson's pronunciation of English.* London: Arnold Publishers.

Guy, G. R. (1980). Variation in the group and the individual: The case of final stop deletion. In W. Labov (Ed.) *Locating Language in Time and Space*. (pp. 1–36) New York: Academic Press.

Hancin-Bhatt, B. (2000). Optimality in second language phonology: Codas in Thai ESL. *Second Language Research, 16*(3), 201.

Hancin-Bhatt, B., & Bhatt, R. M. (1997). Optimal L2 Syllables. *Studies in Second Language Acquisition, 19*(03), 331-378.

Hansen, J. G. (2004). Developmental sequences in the acquisition of English l2 syllable codas: A preliminary study. *Studies in Second Language Acquisition, 26*(01), 85-124.

Hansen, J. (2001). Linguistic constraints on the acquisition of English syllable codas by native speakers of Mandarin Chinese. *Applied Linguistics, 22*(3), 338.

Kreidler, C. W. (2004). *The pronunciation of English: A course book.* Oxford: Blackwell Publishing.

Labov, W. (1966). *The social stratification of English in New York City.* Cambridge: Cambridge University Press.

Labov, W. (1969). Contraction, deletion, and inherent variability of the English copula. *Language, 45*(4), 715-762.

Leung, C., Harris, R., & Rampton, B. (1997). The idealized native speaker, reified ethnicities, and classroom realities. *TESOL Quarterly, 31*(3), 543-566.

Lin, Y. H. (2001). Syllable simplification strategies: A stylistic perspective. *Language Learning, 51*(4), 681-718

Major, R. C. (1999). Chronological and stylistic aspects of second language acquisition of consonant clusters. *Language Learning, 49*(s 1), 123-150.

Rampton, M. (1990). Displacing the 'native speaker': Expertise, affiliation, and inheritance. *ELT Journal,*

44(2), 97-101.
Shockey, L. (2003). *Sound patterns of spoken English.* Malden, MA: Blackwell.
Trudgill, P. (1974). *The social differentiation of English in Norwich.* Cambridge: Cambridge University Press.
Wolfram, W., & Johnson, R. (1982). *Phonological analysis: Focus on American English.* Washington, DC: Center for Applied Linguistics.
Yoo, Hyebae. (2004) A longitudinal study of consonant cluster acquisition. *Studies in Phonetics, Phonology and Morphology 10*(2), 481-503.

The scope of negation in Shona[1]

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Syntactic structure, information structure, and specificity interact to determine scopal relations between negation and bare nouns in Shona (Bantu, Zimbabwe). A subject/object asymmetry in the scope of bare nouns is due to subjects being topics and therefore specific: unlike objects, subjects must take wide scope. Apparent narrow scope readings of bare plural subjects are due to a presupposition of homogeneity. Differences in the scopal possibilities of objects are partially due to syntax. Shona has three verbal prefixes which express clausal negation, appearing in two distinct syntactic positions; prefixes appearing in the lower of the two positions allow wide scope nonspecific readings of objects, while the prefix which appears in the higher position does not. Remaining differences in the scope readings of objects may be due to an animacy hierarchy.

1 Introduction

This paper investigates scopal interactions between negation and bare nouns in Shona, a Bantu language spoken in Zimbabwe. There is a substantial literature on the scope of indefinites (e.g. Fodor & Sag 1982, Heim 1982, Reinhart 1997, Winter 1997, Kratzer 1998, Matthewson 1999, Chung & Ladusaw 2003), but very little attention has been paid to indefinites in Bantu languages. Furthermore, many Bantu languages, including Shona, have negative morphemes in two distinct morphosyntactic positions (Kamba Muzenga 1981, Güldemann 1999), which raises the possibility of different negative morphemes having different scopal properties.

In Shona, subjects take wide scope over negation; the scope possibilities of objects vary from sentence to sentence. I will argue that the wide scope of subjects is due to their information structure status: subjects in Shona are topics, and therefore are interpreted as specific. The scope behaviour of objects is much more varied, and is influenced by both the position of the negative morpheme and the animacy of the arguments in the sentence.

The paper is organised as follows. Sections 2 and 3 give background on negation and nominals in Shona: in §2 I show that the three morphemes used to mark clausal negation in Shona appear in two distinct morphosyntactic positions, and that their distribution is determined by a combination of syntactic and semantic factors, while in §3 I explain the morphology of bare singulars and plurals in Shona and suggest that they are interpreted using choice functions, which may either be existentially closed or have a contextually determined value, allowing both nonspecific indefinite and specific or definite readings[2]. The data under investigation are presented in §4; the examples in this section show that bare singular subjects must be interpreted as specific or definite, while bare plural subjects appear to also have a narrow scope reading, and the scope possibilities of objects vary from sentence to sentence. In the following two sections I propose an explanation for the patterns seen in §4: in §5 I discuss the relation between topic and specificity, and show how it predicts the behaviour of bare singulars and plurals in subject position; in §6 I show that the scopal variation of objects can be partly explained by syntactic differences between the

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2 In this paper I conflate the notions of specificity and definiteness; if specific indefinites are treated as referential, it is difficult to articulate how they differ from definites, especially in a language which does not overtly mark definiteness.

negative morphemes, and partly by different preferences for specific or nonspecific readings, which are in turn influenced by animacy. §7 concludes the paper.

2 Negation in Shona

Shona has three verbal prefixes which express clausal negation; one of these prefixes appears before the subject agreement prefix and the other two after it. For the most part, these prefixes are in complementary distribution, each appearing in a different set of clause types; in one environment, namely clauses with nonverbal predicates, two of the prefixes (*ha-* and *si-*) appear together[3].

The first prefix, *ha-*, precedes the subject agreement prefix and appears in main clauses with one finite verb (1a), as well as in the same types of clauses as subordinates introduced by *kuti* 'that', *nokuti* 'because', and *zvekuti* 'so ... that'. Neither of the other prefixes can be used in these contexts, so (1b) and (1c), where a main clause with a single finite verb is negated by *si-* or *sa-*, are ungrammatical[4].

(1) a. Ha - ndi-na ku-bik - a ma-nhanga.
NEG1-1SG-PST INF-cook-FV CL6-pumpkin
'I didn't cook (the) pumpkins.'
b. *Ndi-si-na ku-bik-a ma-nhanga.
c. *Ndi-sa-na ku-bik-a ma-nhanga.

Another prefix, *si-*, appears after the subject agreement prefix. *Si-* is used to negate clauses with multiple finite verbs, such as (2a), in which both auxiliaries (*nga* and *na*) carry subject agreement prefixes; it is also used in many subordinate clauses, such as relative clauses, concessive clauses, and conditional antecedents. Again, the other two prefixes cannot be used in these contexts: placing *sa-* in place of *si-* results in ungrammaticality (2b), as does attaching *ha-* to either of the auxiliaries (2c-d).

(2) a. Nd - aka - nga ndi-si - na ku-bik - a ma-nhanga.
1SG-REM.PST-AUX 1SG-NEG2-PST INF-cook-FV CL6-pumpkin
'I hadn't cooked (the) pumpkins.'
b. *Nd-aka-nga ndi-sa-na ku-bik-a ma-nhanga.
c. *Nd-aka-nga ha-ndi-na ku-bik-a ma-nhanga.
d. *Ha-nd-aka-nga ndi-na ku-bik-a ma-nhanga.

The last prefix, *sa-*, follows the subject agreement prefix and is used to negate imperatives, hortatives, indirect commands, wishes, purpose clauses, and clauses with the auxiliary *ti*, indicating a planned but uncompleted action (3a). Once again, the other two prefixes cannot be used in these contexts; for example, the auxiliary *ti* cannot appear with either *si-* (3b) or *ha-* (3c).

(3) a. Nd - aka - nga ndi-sa - ti nd - a - bik - a ma-nhanga.
1SG-REM.PST-AUX 1SG-NEG3-AUX 1SG-REC.PST-cook-FV CL6-pumpkin
'I hadn't cooked (the) pumpkins yet.'
b. *Nd-aka-nga ndi-si-ti nd-a-bik-a ma-nhanga.
c. *Nd-aka-nga ha-ndi-ti nd-a-bik-a ma-nhanga.

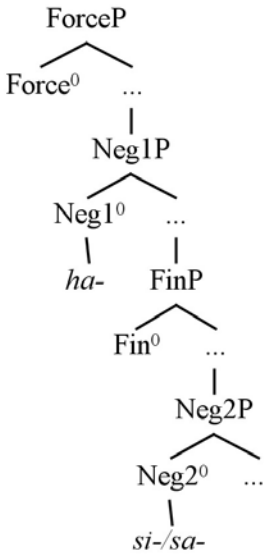
Assuming an expanded clause structure like that proposed by Pollock (1989) and Rizzi (1997), as well as the Mirror Principle (Baker 1985), I consider the negative prefixes to head two distinct functional projections, the higher one (which hosts *ha-*) somewhere between ForceP and FinP and the lower one (which hosts *si-* and *sa-*) below FinP (4). In contexts where the full clause structure is projected, *ha-* is used; if structure is projected only to FinP, as when one finite verb is embedded under another in the same clause, *si-* or *sa-* is used. The difference between the contexts for the two lower prefixes is semantic: *si-*

3 These clauses afford the same scopal possibilities as those negated by *ha-* alone, and are therefore not exemplified in this paper.

4 All Shona examples in this paper are from the author's fieldwork with a native speaker of the Karanga dialect.

negates realis clauses and *sa-* negates irrealis clauses.

(4)



The appearance of negative morphemes in two different positions is interesting because it allows them to have different scope; I will argue in §6 that this is indeed the case. In the next section, however, I turn to some background on nominal expressions in Shona.

3 Bare singulars and bare plurals in Shona

Noun stems in Shona are obligatorily accompanied by noun class prefixes which mark number and grammatical gender. Thus, bare noun stems such as *ana* 'child' and *chero* 'fruit' cannot appear as arguments of a verb (object in (5a), subject in (6a)), as objects of a preposition[5] (7a), or as predicates (8a); however, these same stems with the appropriate class prefix attached are grammatical in all these positions (as in the b examples).

(5) a. *Nd - a - won-a ana.
1SG-REC.PST-see-FV child
Intended: 'I saw (a) child.'

b. Nd - a - won-a **mw**-ana.
1SG-REC.PST-see-FV CL1-child
'I saw a/the child.'

(6) a. *Ana a - ka - sek - a.
child 3SG-REM.PST-laugh-FV
Intended: '(A) child laughed.'

b. **Mw**-ana a - ka - sek - a.
CL1- child 3SG-REM.PST-laugh-FV
'A/the child laughed.'

(7) a. *Mu-kadzi a - ka - tsvod-w - a na - rume.
CL1-woman 3SG-REM.PST-kiss - PSV-FV PREP-man
Intended: 'A/the woman was kissed by (a) man.'

b. Mu-kadzi a - ka - tsvod-w - a na - **mu**-rume.
CL1-woman 3SG-REM.PST-kiss - PSV-FV PREP-CL1-man
'A/the woman was kissed by a/the man.'

5 The preposition *na* can be agentive (as in (7)), associative, or instrumental; it has three allomorphs, *na*, *ne* and *no*, depending on the class of the noun it combines with (Fortune 1981).

(8) a. *Damba chero.
CL5.damba fruit
Intended: 'A/the damba (klapper apple) is (a) fruit.'
b. Damba **mu**-chero.
CL5.damba CL3-fruit
'A/the damba is a fruit.'

I use the term "bare classified nouns" to refer to bare plurals and bare singulars: nouns which are marked for number, but are not accompanied by any modifiers such as adjectives, quantifiers, or demonstratives. Unlike truly bare nouns, bare classified nouns have some functional structure (at least number marking, and possibly a covert determiner-like element in the form of a choice function variable), and do not have general number (they are interpreted as singular or plural depending on the class prefix) or obligatory narrow scope.

Bare classified nouns appear freely as arguments, as in (5b) and (6b) above. There are no definite or indefinite articles in Shona; bare classified nouns are unmarked for definiteness. In this paper, I will gloss them as ambiguous between a definite and an indefinite interpretation, although in context, one interpretation may be preferred or ruled out.

For concreteness, I treat bare classified nouns in Shona as interpreted using choice functions. A choice function maps the set denoted by the indefinite onto one of its members, effectively "choosing" one individual to be an argument of the predicate. This type of analysis was first proposed for English indefinites by Reinhart (1997), using existential quantification over choice functions.

On Reinhart's analysis[6], the function variable, with the indefinite expression as its argument, is located in the base position of the indefinite, while the existential operator which binds it and the restrictive term stating that it is a choice function are found higher in the clause. This means that existential quantification over choice functions allows the indefinite to be interpreted as taking wide scope without actually moving; they can effectively take any scope, either narrow or wide, as the function is "bound by an existential operator arbitrarily far away" (Reinhart 1997: 372).

Kratzer (1998) proposes a slightly different analysis: rather than being bound by an existential quantifier, the function variable is free, with its value determined by the context. This gives the indefinite a specific or referential reading, which is scopeless in the same way that definite descriptions are, appearing to take widest scope. Narrow scope readings of indefinites are produced by an alternative interpretation as generalised quantifiers[7].

I suggest that both kinds of choice functions are possible in Shona: bare classified nouns[8] are always interpreted using choice functions, but the function variables are sometimes existentially closed (giving a nonspecific or indefinite reading) and sometimes determined by context (giving a definite or specific reading). The sentence in (9), which has a proper name as the subject and a bare plural as the object, has the two readings in (9a-b). (9a) is the nonspecific reading of the bare plural; it can be paraphrased as "there is a choice function such that Shingi cooked the group of pumpkins chosen by that function". The specific reading in (9b) leaves the choice function variable free, so that its value is determined by the context; this causes the bare plural to refer to a salient group of pumpkins in the discourse context.

(9) Shingi a - ka - bik - a ma-nhanga.
S. 3SG-REM.PST-cook-FV CL6-pumpkin
'Shingi cooked (the) pumpkins.'

6 A similar analysis is proposed by Winter (1997).

7 Matthewson (1999), based on evidence from St'át'imcets, proposes an analysis very similar to Kratzer's, in which wide scope readings are produced by choice functions existentially closed with widest scope. Since bare classified nouns in Shona, unlike St'át'imcets DPs, are interpreted as specific in some cases, I make use of Kratzer's version rather than Matthewson's.

8 The choice function interpretation also extends to nominal expressions containing some kinds of modifiers (e.g. adjectives, numerals); however, not all nominal expressions in Shona are interpreted using choice functions (for example, DPs containing the quantifier *oga-oga* 'every' do not involve choice functions).

a. ∃f [CH(f) ∧ cook(S,f(*pumpkin))]
b. [CH(f) ∧ cook(S,f(*pumpkin))]

The idea that the choice function variable, and through it the noun, has both an existentially closed and a referential reading mirrors Fodor and Sag's (1982) proposal to some extent: they also propose that indefinites are ambiguous between an existential interpretation and a specific/referential interpretation, but they analyse the readings as derived from two different generalised quantifier readings of *a* rather than from choice functions. It is also compatible with Chung and Ladusaw's (2003) proposal that a given indefinite expression may be interpreted either by choice functions or by a Restrict operation which yields obligatory narrow scope.

Several alternate analyses are possible: for example, the existential reading of indefinites could be derived from a covert generalised quantifier, or by treating bare classified nouns as free variables as in Heim (1982), while the referential or definite reading could be derived using the iota operator. A full comparison of these approaches, however, is beyond the scope of this paper.

4 Scopal interactions

This section presents the scopal possibilities afforded to bare classified nouns in negative sentences. In brief, singular subjects must be specific, while plural subjects appear to also allow a narrow scope nonspecific reading; the possible readings of objects vary from clause to clause.

Singular subjects appearing with negation must have a (wide scope) specific reading. Both wide scope non-specific readings and narrow scope readings are disallowed:

(10) *Context: One of the students at the university successfully lobbied to have a race organised on campus.*
Mu-dzidzi ha - a - na ku-mhany-a.
CL1-student NEG1-3SG-PST INF-run - FV
'A/the student didn't run.'
accepted if all the students ran except for the one whose idea it was
rejected if all the students ran except for some other one
rejected if no students ran

Plural subjects appear to allow narrow scope readings as well as wide scope specific readings; the wide scope non-specific reading is impossible with plurals as well as with singulars.

(11) *Context: A group of students organised a race on campus.*
Va- dzidzi ha - va - na ku-mhany-a.
CL2-student NEG1-3PL-PST INF-run - FV
'(The) students didn't run.'
accepted if all the students ran except for the ones who organised the race
rejected if some of the students ran and some didn't
accepted if no students ran

Objects usually take narrow scope when they appear in a clause negated by *ha-*, as in (12). However, given sufficient context, a (wide scope) specific reading may appear instead, as in (13).

(12) *Context: Someone is looking through a pile of letters and asks if you wrote (one of) them.*
Ha - ndi-na ku-nyor -a tsamba.
NEG1-1SG-PST INF-write-FV CL9.letter
'I didn't write a/the letter.'
accepted if you didn't write any letters
rejected if you wrote all the letters in the pile except for one
rejected if you wrote all the letters except for the one the person asking is looking at

(13) *Context: I went to see a friend's child perform at a stand-up comedy contest for children. Most of the contestants were quite funny, but unfortunately my friend's child was not.*
Ha - ndi-na ku-sek - a mw-ana.
NEG1-1SG-PST INF-laugh-FV CL1-child
accepted if I laughed at all of them except my friend's child
rejected if I laughed at some children, including my friend's, but not all
rejected if I didn't laugh at any children

Objects of clauses negated by *si-* may be ambiguous between narrow and wide scope (14) or specific only (15).

(14) Nd-aka - nga ndi-si - na ku-gez - a mw-ana.
1SG-REM.PST-AUX 1SG-NEG2-PST INF-wash-FV CL1-child
'I hadn't washed a/the child.'
accepted if no children had been washed
accepted if one child hadn't been washed but others had been

(15) *Context: A man went away on a business trip. Usually before he leaves he kisses all his children goodbye, but this time the bus came early.*
Mu-rume a - ka - nga a - si - na ku-tsvod-a mw-ana.
CL1-man 3SG-REM.PST-AUX 3SG-NEG2-PST INF-kiss - FV CL1-child
'A/the man hadn't kissed a/the child.'
rejected if he didn't kiss any
rejected if he kissed some and missed one, if there is nothing special about the one he missed
accepted if he kissed all of them except for his favourite

Objects of clauses negated by *sa-* also show variable scope behaviour: they may be narrow scope only (16), ambiguous between narrow and wide scope (17), or specific only (18).

(16) Nd-aka - nga ndi-sa - ti nd- a - gez - a chi-garo.
1SG-REM.PST-AUX 1SG-NEG3-AUX 1SG-REC.PST-wash-FV CL7-chair
'I hadn't washed a/the chair yet.'
accepted if no chairs had been washed, if you were only planning to wash one
rejected if some chairs had been washed but one hadn't

(17) *Context: Someone waiting at the bus stop dropped a basket of fruit, and the fruit rolled all over the place. When the bus came...*
A - ka - nga a - sa - ti a - won-a mu-chero.
3SG-REM.PST-AUX 3SG-NEG3-AUX 3SG-see-FV CL3-fruit
'S/he hadn't seen a/the fruit yet.'
accepted if none were found
accepted if most were found but one wasn't

(18) *Context: A woman decided to be more affectionate with her children, and resolved to kiss each of them every day. But the first day she was really busy, and when it got to bedtime...*
Mu-kadzi a - ka - nga a - sa - ti a - tsvod-a mw-ana.
CL1-woman 3SG-REM.PST-AUX 3SG-NEG3-AUX 3SG-kiss-FV CL1-child
'A/the woman hadn't kissed a/the child yet.'
rejected if she hadn't kissed any of them
rejected if she kissed some but missed one, if there's nothing special about the one she missed
accepted if she kissed all of them except her favourite

The table below summarises the possible readings of bare nouns[9]. Singular subjects must be specific, while plural subjects are either specific or take narrow scope under negation; objects show variable behaviour, but slightly less variable with respect to *ha-* than with respect to the two lower prefixes, which may allow wide scope non-specific readings as well as specific and narrow scope readings.

		Specific	Non-specific	
			Wide	Narrow
Subjects	Singular	yes	no	no
	Plural	yes	no	yes
Objects	with *ha-*	yes*	no	yes*
	with *si-* and *sa-*	yes*	yes*	yes*

Two issues arise from this discussion: a subject/object asymmetry, and variability in the scopal behaviour of objects. I will address these issues in §5 and §6 respectively.

5 Topic and specificity

Subjects in Shona strongly prefer to be interpreted as specific; this is evident not only in negative clauses but also when the object is universally quantified, as in (19) where the comment offered by my consultant suggests that the speaker must be referring to a particular child:

(19) Mw-ana a - ka - rum-a chi-ngwa ch - oga - choga.
CL1- child 3SG-REM.PST-bite-FV CL7-bread CL7-every-RED
'A/the child bit every (loaf of) bread.'
accepted if the same child bit all the loaves
rejected if a different child bit each loaf
Consultant's comment: If I were an employee at the bakery and I said this to my boss, he could say "show me the child", and if I showed him more than one child he would ask why I said there was only one.

Similarly, if the same bare classified noun appears as the subject of two adjacent clauses, it is interpreted as referring to the same individual; (20) is infelicitous because it is understood to mean that one dog is simultaneously in the house and in the forest. If an existential construction is used instead, as in (21), the two clauses are interpreted as involving two different individuals. This mirrors the contrast in English between referential (including definite) and non-referential (including nonspecific indefinite) expressions, as in (22) and (23).

(20) #Imbwa i - ri mu - mba, imbwa i - ri mu - sango.
CL9.dog CL9-COP CL18-CL9.house CL9.dog CL9-COP CL18-CL5.forest
'A/the dog is in a/the house, a/the dog is in a/the forest.

(21) Pane imbwa mu- mba, pane imbwa mu - sango.
EXIST CL9.dog CL18-CL9.house EXIST CL9.dog CL18-CL5.forest
'There's a/the dog in a/the house, there's a/the dog in a/the forest.'

(22) #The dog is in the house and the dog is in the forest.

(23) A dog is in the house and a dog is in the forest.

9 The asterisks indicate readings which are sometimes accepted and sometimes rejected.

The reason for this specificity preference lies in the relationship between syntactic structure and information structure. Bliss and Storoshenko (2008) argue on independent grounds that grammatical subjects in Shona are actually topics (this has also been proposed for other Bantu languages (Creissels & Robert 1998, Demuth & Harford 1999)). It has often been noted that topichood is related to definiteness (Gundel & Fretheim 2004), and a link has been proposed between topichood and the specific interpretation of indefinites (Cresti 1995, Portner & Yabushita 2001).

Plurals appear to allow narrow scope nonspecific readings; however, this could actually be due to the possibility of a specific plural referring to all (contextually relevant) individuals. For example, a narrow scope reading for (11) is given in (24); this reading can be paraphrased as "there is no plurality of students which ran"[10]. A wide scope specific reading is given in (25); in this case, rather than being existentially quantified, the choice function has its value determined by context.

(11) *Context: A group of students organised a race on campus.*
Va- dzidzi ha - va - na ku-mhany-a.
CL2-student NEG1-3PL-PST INF-run - FV
'(The) students didn't run.'
accepted if all the students ran except for the ones who organised the race
rejected if some of the students ran and some didn't
accepted if no students ran

(24) $\neg\exists f\,[CH(f) \wedge run(f(*student))]$

(25) $CH(f) \wedge \neg run(f(*student))$

Löbner (2000) notes that in some cases, a sentence and its negation may both be undefined. For example, consider the two sentences in (26), borrowed from Löbner (p. 233-234):

(26) a. The cow is black.
b. The cow is not black.

If the cow is in fact half black and half white, neither (26a) nor (26b) is true, but intuitively neither is quite false either. To account for this intuition, Löbner proposes a presupposition of homogeneity (or indivisibility) -- that is, predicates are presupposed to apply to either all or no relevant parts of their arguments. This presupposition makes (26a) and (b) both cases of presupposition failure. Beck (2001), who uses homogeneity to explain stronger than expected readings of reciprocals and plurals in the scope of negation, formulates the presupposition as (27):

(27) $*P(A) = 1$ iff $\forall x\,[x \in A \rightarrow P(x)]$
0 iff $\forall x\,[x \in A \rightarrow \neg P(x)]$
undefined otherwise (Beck 2001: 134)

The presupposition of homogeneity causes (25) to be interpreted as meaning that the predicate *run* is true of none of the individuals making up the sum which is its argument. If the choice function picks out the sum of all relevant students (arguably the most likely referent in the absence of any salient subgroups), this will be equivalent to (24), the narrow scope reading[11].

10 I assume Link's (1983) lattice-theoretic approach to plurality. The *-operator takes a one-place predicate denoting a set of individuals and adds to its denotation all the sums (pluralities) composed of those individuals.

11 There is another similar phenomenon in Shona which cannot be explained by homogeneity: when a DP containing the universal quantifier *oga-oga* 'every' appears in object position with a bare plural subject, the bare plural appears to have a narrow scope reading. For example, (i) is true not only if every loaf of bread was bitten by the same (contextually salient) group of children, but also if each loaf was bitten by different children.

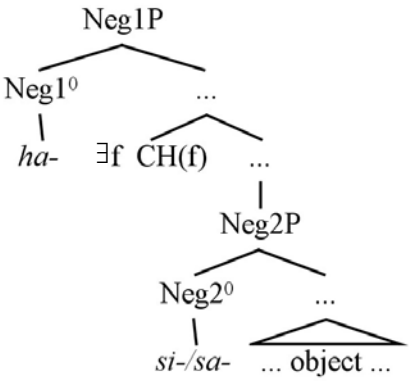
i. V - ana va - ka - rum-a chi-ngwa ch- oga - choga.
CL2-child CL2-REM.PST-bite-FV CL7-bread CL7-every-RED
'(The) children bit every (loaf of) bread.'

The correlation between specificity and subjecthood is reminiscent of Diesing's (1992) proposal that indefinites appearing within the VP (at LF) are interpreted as existential while those appearing outside the VP are interpreted as presuppositional or generic. Unlike Diesing, I believe that existential closure may take place above the VP level as well, and the two readings I consider for bare classified nouns are existential and referential rather than existential and partitive; nonetheless, the similarity is suggestive of a parallel between Shona and better-studied languages like German.

6 Objects, scope, and specificity

Objects can have wide scope nonspecific readings in sentences negated by *si-* and *sa-*, but not in sentences negated by *ha-*. This may be due to the different positions of negation. I have analysed *si-* and *sa-* as appearing in a lower position than *ha-*, which opens the possibility that there is a location between the two positions where existential quantification over choice function can appear, as in (28):

(28)



This structure would give a narrow scope reading for the object of a sentence negated by *ha-*, but a wide scope existential reading in a sentence negated by *si-* or *sa-*; as long as there is no higher location for existential quantification, this explains the distribution of wide scope nonspecific readings.

In addition to differences in scope, there also appear to be differences across sentences in the availability of specific and nonspecific readings. No doubt this is in part simply due to the different contexts in which the sentences are presented, as the salience of particular individuals varies from context to context. However, the availability of specific readings may also be influenced by an animacy hierarchy: an object DP is more likely to be understood as specific if it is animate rather than inanimate and if the subject is third person rather than first person (this could perhaps be collapsed to a single condition that the object DP is more likely to be specific if it is closer to the subject on the animacy hierarchy).

Animacy hierarchies have been proposed for Shona and other Bantu languages before. For example, Hawkinson and Hyman (1974) propose a hierarchy of natural topic as in (29), based on correlations between animacy and argument structure roles in Shona: they show that in ambiguous causative and applicative sentences, arguments which are higher on this hierarchy are more likely to be interpreted as benefactive rather than accusative and as agentive rather than benefactive.

(29) 1/2p > human > animal > inanimate

Bentley (1997) argues (for Bantu in general) that a similar hierarchy determines which object

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The narrow scope reading may be explained by a collective reading along with nonmaximality (Dowty 1987, Brisson 1998). A definite plural in English can be used in contexts where not every member of the group it refers to participated in the event:

ii. At the end of the press conference, the reporters asked the president questions. (Dowty 1987:103)

If the same is true in Shona, it could explain the apparent narrow scope reading of (i). The availability of both nonmaximality and homogeneity is troubling, however, because the two contradict each other, and it is not clear when to use homogeneity and when to use nonmaximality. Perhaps homogeneity is linked somehow to downward entailing environments; I leave this issue to further research.

argument is associated with a verbal object agreement prefix in ditransitive sentences. In Shona, the association of an object with an agreement prefix makes it more likely to be interpreted as specific. For example, the preferred reading of (30) is one on which the objects of the two clauses are different individuals, which is the interpretation of a parallel English sentence with indefinite objects; however, (31), which differs from (30) only in that the verb of the second clause carries an object agreement marker, is preferentially interpreted with the objects of both clauses referring to the same individual, which is the interpretation that a parallel English sentence with definite objects receives.

(30) Mu-rume a - ka - dy -a damba, mu-kadzi a - ka - dy -a -wo (damba).
CL1-man 3SG-REM.PST-eat-FV CL5.damba CL1-woman 3SG-REM.PST-eat-FV-also CL5.damba
'A/the man ate a/the damba (klapper apple) and a/the woman ate (a/the damba) too.'
first reading: they each ate a different one
also accepted if they shared one

(31) Mu-rume a - ka - dy -a damba mu-kadzi a - ka - **ri** - dy-a -wo (damba).
CL1-man 3SG-REM.PST-eat-FV CL5.damba CL1-woman 3SG-REM.PST-CL5-eat-FV-also CL5.damba
'A/the man ate a/the damba (klapper apple) and a/the woman ate (a/the damba) too.'
first reading: they shared one
also accepted if they each ate a different one

Thus, it seems that specificity, animacy, and object agreement are all associated with each other in Shona[12].

7 Conclusion

I have argued that subjects in Shona are specific (and therefore take wide scope) because they are topics, and that the scopal possibilities of objects are affected by both the position of the negative morpheme used and an animacy hierarchy. The scopal relations investigated in this paper are therefore jointly determined by syntactic, semantic, and information structure factors.

References

Baker, Mark. 1985. The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16:373–415.

Beck, Sigrid. 2001. Reciprocals are definites. *Natural Language Semantics* 9:69–138.

Bentley, Mayrene. 1997. Variation in Bantu verbal agreement. In *African linguistics at the crossroads: Papers from Kwaluseni*, ed. Robert K Herbert, 239–250. Köln: Rüdiger Köppe.

Bliss, Heather, and Dennis Ryan Storoshenko. 2008. Passivization and A'-movement in Shona. In *Proceedings of the 2008 annual conference of the Canadian Linguistic Association*, ed. Susie Jones. http://www.chass.utoronto.ca/˜cla-acl/actes2008/CLA2008_Bliss_Storoshenko.pdf.

Brisson, Christine. 1998. *Distributivity, maximality, and floating quantifiers*. PhD dissertation, Rutgers.

Chung, Sandra, and William A Ladusaw. 2003. *Restriction and saturation*. Cambridge: MIT Press.

Creissels, Denis, and Stéphane Robert. 1998. Morphologie verbale et organisation discursive de l'énoncé: le cas du tswana et du wolof. *Faits de langues* 6:161–178.

Cresti, Diana. 1995. *Indefinite topics*. PhD dissertation, MIT.

Demuth, Katherine, and Carolyn Harford. 1999. Verb raising and subject inversion in Bantu relatives. *Journal of African Languages and Linguistics* 20:41–61.

Diesing, Molly. 1992. *Indefinites*. Cambridge, MA: MIT Press.

Dowty, David. 1987. Collective predicates, distributive predicates, and *All*. In *Proceedings of ESCOL 3*,

12 Given that specificity and animacy are associated, there may be some relation between the association of specificity with object marking and the cross-linguistic observation that more animate objects are more likely to be overtly accusative-marked (Haspelmath 2008).

96–115. Ohio State University.
Fodor, Janet Dean, and Ivan A Sag. 1982. Referential and quantificational indefinites. *Linguistics and Philosophy* 5:355–398.
Fortune, George. 1981. *Shona grammatical constructions*. Harare, Zimbabwe: Mercury Press.
Güldemann, Tom. 1999. The genesis of verbal negation in Bantu and its dependency on functional features of clause types. In *Bantu historical linguistics: Theoretical and empirical perspectives*, ed. Jean-Marie Hombert and Larry M Hyman, 545–587. Stanford: CSLI Publications.
Gundel, Jeanette K, and Thorstein Fretheim. 2004. Topic and focus. In *The handbook of pragmatics*, ed. Laurence Horn and Gregory Ward, 174–196. Oxford: Blackwell.
Haspelmath, Martin. 2008. Frequency vs. iconicity in explaining grammatical asymmetries. *Cognitive Linguistics* 19:1-33.
Hawkinson, Annie K, and Larry M Hyman. 1974. Hierarchies of natural topic in Shona. *Studies in African Linguistics* 5:147–170.
Heim, Irene. 1982. *The semantics of definite and indefinite noun phrases*. PhD dissertation, MIT.
Kamba Muzenga, J.G. 1981. *Les formes verbales négatives dans les langues bantoues*. Tervuren: Musée royale de l'Afrique centrale.
Kratzer, Angelika. 1998. Scope or pseudoscope? Are there wide-scope indefinites? In *Events and grammar*, ed. Susan Rothstein, 163–196. Dordrecht: Kluwer Academic Publishers.
Link, Godehard. 1983. The logical analysis of plural and mass terms: A lattice-theoretical approach. In *Meaning, use, and interpretation of language*, ed. Rainer Bauerle, Christoph Schwarze, and Arnim von Stechow, 302–323. New York: Walter de Gruyter.
Löbner, Sebastian. 2000. Polarity in natural language: predication, quantification and negation in particular and characterizing sentences. *Linguistics and Philosophy* 23:213–308.
Matthewson, Lisa. 1999. On the interpretation of wide-scope indefinites. *Natural Language Semantics* 7:79–134.
Pollock, Jean-Yves. 1989. Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20:356–424.
Portner, Paul, and Katsuhiko Yabushita. 2001. Specific indefinites and the information structure theory of topics. *Journal of Semantics* 18:271–297.
Reinhart, Tanya. 1997. Quantifier scope: How labor is divided between QR and choice functions. *Linguistics and Philosophy* 20:335–397.
Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar: A handbook in generative syntax*, ed. Liliane Haegeman, 281–337. Dordrecht, The Netherlands: Kluwer Academic Publishers.
Winter, Yoad. 1997. Choice functions and the scopal semantics of indefinites. *Linguistics and Philosophy* 20:399–467.

Tough constructions as topic and focus

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The aim of this article is to provide a theory of construal which adequately explains the generation of tough constructions. In this article, I will argue against the accepted interpretation of tough constructions as null-operator constructions. The theory proposed here will treat tough constructions as structures based on topic and focus elements present in the generative derivation. I will demonstrate certain restrictions, namely scope ambiguity and limitations on which embedded clause object may become the matrix clause subject, incurred by tough constructions which current theories cannot adequately explain. I will argue for the 'tough-object' to be generated twice in the syntax, once each in the embedded and matrix clauses, undergo topic or focus, and be forced into a form of deletion of the lower copy to preserve the linear phonetic output, yet preserve the semantic content.

1 Tough constructions

1.1 Types of tough constructions

Tough constructions have presented a unique challenge to linguistic theory, throughout the many years of study on the subject. These constructions involve a nominal in the matrix clause acting as the subject of the construction, yet semantically linked as an argument of the embedded verb. While this, in and of itself, poses no problem, the cause for concern lies with the nominal's apparent ability to move through a CP into an A-position, which is improper movement (Chomsky 1973).

There are a few limitations on the manner in which tough constructions can be created involving two differing variations and a restriction on what type of nominal may be classified as a 'tough-object'. The first limitation involves the manner in which these constructions can be presented, as shown in (1).

(1) a. It is easy to find John.
b. John is easy to find.

The example in (1a) gives a variation of tough constructions in which the tough-object remains in the argument position of the embedded verb. In (1a), the tough-object *John* is selected by the embedded verb as the accusative marked object, as we would expect, but rather than appearing to move into the subject position of the matrix clause, it remains in its base-generated position and a copular is inserted in [spec,T] instead to fulfill the selection requirements of matrix T. The tough-object keeps both its thematic role (hereafter θ-role) and case, as seen in (2) by the use of a pronoun.

(2) It is easy to find <u>him</u>.

The second variation, in (1b), seems to allow for movement of the tough-object *John* from the embedded clause into the matrix clause. Unlike (1a), the tough-object in (1b) does assume a new case feature, shown again with the use of a pronoun in (3).

(3) <u>He</u> is easy to find.

This apparent revaluing of the tough-object's case feature as nominative (NOM) is the problem which tough constructions pose to the theory. Setting this aside for later discussion, I will now focus on the restrictions on the types of verbs allowed in proper tough constructions.

Tough constructions are selective in that they require a transitive verb to be the verb in the embedded clause. This can be either a transitive (4a) or ditransitive verb (4b), but not an intransitive verb (4c).

(4) a. John is easy to find.
b. Letters are easy to send to Mary.
c. *Andrew is easy to sleep.

The ungrammaticality of (4c) is due to the inability of the non-finite embedded verb to assign a NOM case to the embedded subject. If the embedded subject were to receive a case value, it would need to undergo movement into the matrix [spec,T] position to receive it. While subject-to-subject raising is possible, indeed even common, in English, there is no CP phase boundary to block such a move. In the case of tough constructions, there is a CP phase boundary, so such a move would be impossible (Chomsky 2005). However, this CP phase also presents a problem for any embedded objects which might need to undergo movement into the matrix [spec,T] position. The innovative analyses which have been proposed to circumvent this are covered in the following sections.

Transitives and ditransitives are verbs which select for (at least) one internal argument from the Numeration. Transitives have only a single internal argument which may become a tough-object and are the most common type of embedded verb found in tough constructions. In (4a), the tough-object *John* is selected by the verb *find* at the beginning of the derivation. Both are merged together to form the first section of the derivation and the tough-object receives its θ-role. Once the embedded little-v head is merged into the derivation, the tough-object receives accusative (ACC) case. Eventually the matrix clause is added into the derivation where the tough-object appears in the subject position, receiving another case, NOM, in the process.

This derivational structure is much the same in ditransitive tough constructions, but the construction might select for either of the two internal arguments of the embedded verb to be the tough-object. In (4b), the tough-object is the nominal which originates as the direct object of the embedded verb *send*, however in (5) where the indirect object is the tough-object instead, it produces a structure which is very awkward at best and ungrammatical at worst.

(5) ??Mary is easy to send letters to.

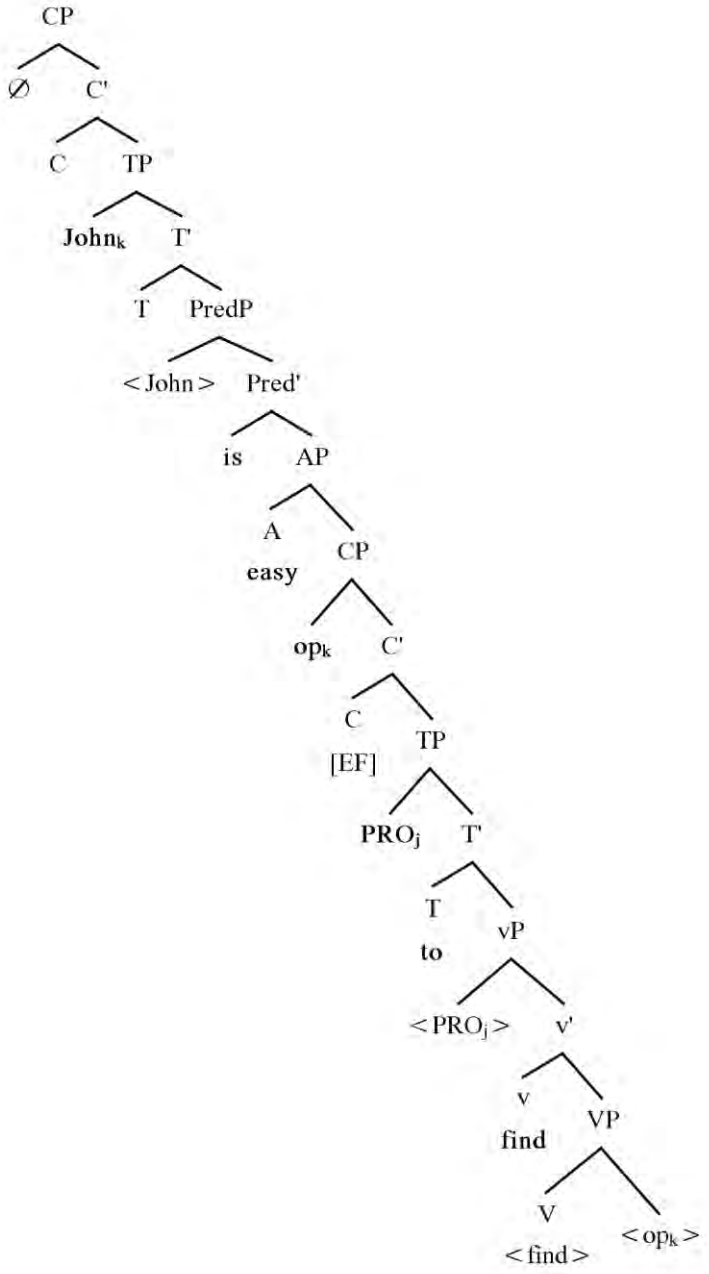
Through this example, we can see that only the direct object is allowed to become the tough-object. This limitation will be discussed in greater detail in later sections.

1.2 The null operator analysis

Most analyses have concluded that there is no movement of the tough-object, therefore a null operator (0-op) must be an integral part of the derivational structure (Chomsky 1973; Montalbetti *et al.* 1982; Richards 2001). Rather than moving the tough-object into the matrix clause, the 0-op moves no further no further than the embedded [spec,C]. The tough-object itself, rather than being base generated inside the embedded clause as an argument of the embedded verb, it base generated in the matrix clause at the vP level, as an external argument of the matrix adjective.

The full derivation for a 0-op tough construction is demonstrated in (6). The 0-op is first base generated in a position where it takes the θ-role given by the embedded verb. The derivation progresses through the merger of functional heads (v, T, C), eventually leading to the merger of the [spec,C] position. It is to this position which the 0-op moves to be visible to arguments in the matrix clause. The entire embedded clause is then selected for by the matrix adjective which is in turn selected by the predicative portion of the matrix clause. Here the tough-object is base generated at the external argument position and receives no θ-role. Normally this would violate the θ-criterion (Hornstein 2001). However, the tough-object is immediately co-indexed with the 0-op inside the embedded clause, thus providing it with a LF interpretation in the embedded clause and a link to the θ-role given by the embedded verb *find*. Finally, the tough-object moves to satisfy the EPP and to check the case feature of the matrix T.

(6)



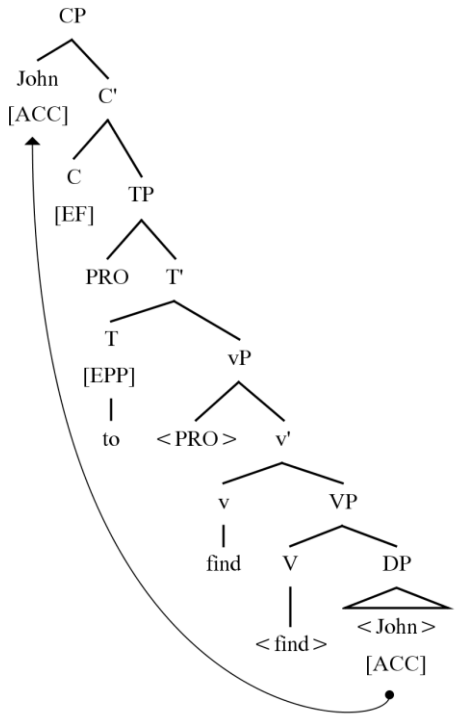
1.3 The sideward move analysis

The sideward move theory, first proposed by Nunes (1995) and expanded upon in Nunes (2001) and Hornstein (2001), argues for a different interpretation of tough constructions than the standard analysis. In cases of sideward move, the tough-object will move 'out' of the derivation of the embedded clause and be remerged into an argument position of the matrix adjective. The embedded clause is then adjoined to the matrix PredP in order to establish a semantic relation. In this section, I will provide a step-by-step overview of how a sideward move derivation is executed.

The derivation begins with the merger of the embedded verb and the tough-object from the Numeration. The embedded clause is built up by adding vP, TP, and finally the embedded CP. The

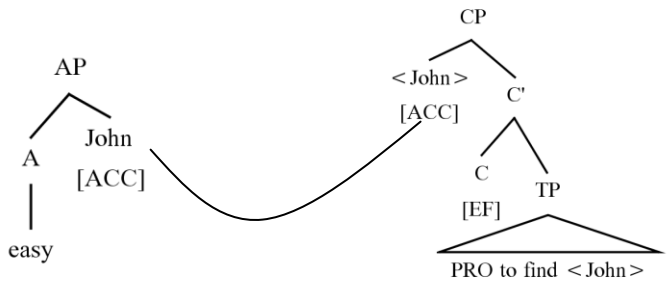
tough-object is then moved to [spec,C] by an edge feature (Chomsky 2005: 14) in order to make it accessible for further operations in the next phase. This process is seen in (7).

(7)



At this point in the derivation, everything has moved according to a feature-driven process. However, sideward move then creates a second derivational structure outside of the first. This structure begins with the adjective phrase inside the matrix clause. The adjective will select for the tough-object, but it needs to do so in a manner which does not violate improper movement (Chomsky 1973). Normally, this would be impossible because the tough-object occupies an A'-position in the embedded clause and therefore cannot move into an A-position. To get around this, the tough-object is 'removed' from the first derivation and remerged into the second derivational structure, much in the same way as first merge from the Numeration (8).

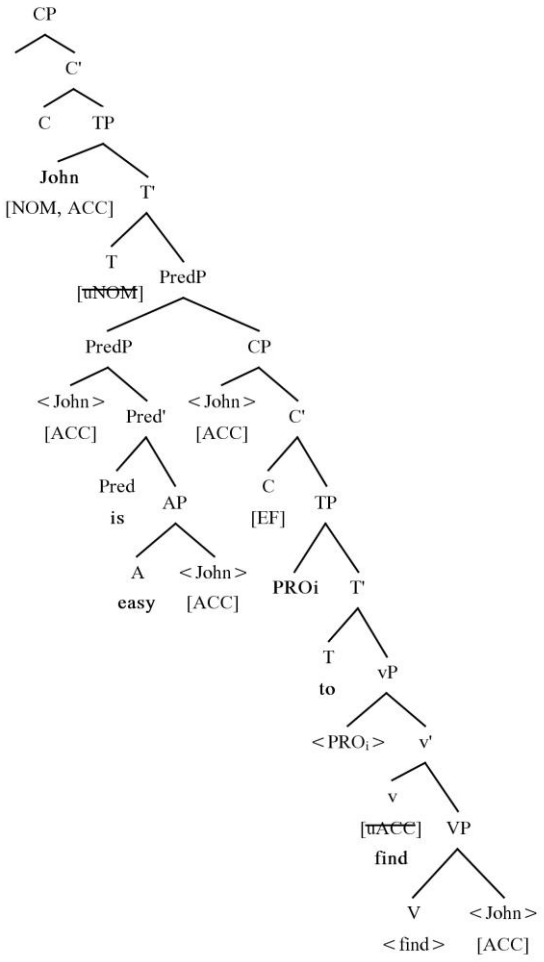
(8)



The second derivational structure is then generated until it reaches the PredP where the first derivation is adjoined. After this point, the derivation continues with *John* moving first into the [spec,Pred] position and then into the [spec,T] position to check the case feature on T. In the course of

this entire derivation, the tough-object receives two differing cases and multiple θ-roles. The full derivational structure for sideward movement is found in (9).

(9)



2 Limitations of the current theories

2.1 Scope Ambiguity

Ambiguities in scope relations prove to be a problem for the standard analysis. In bi-clausal structures, we expect the scope of quantifiers to be rigid with respect to their c-command hierarchy (Szabolsci 2003). We can see this in several examples of English bi-clausal structures, most notably in relative clauses and parasitic gaps.

(10) [$_{DP}$ Some book$_i$ [$_{CP}$ that everyone bought *op$_i$*]] was banned. (Relative Clause)
some book > everyone, *everyone > some book
i.e. '*The Wizard of Oz* was banned after everyone bought a copy.'

(11) He got [$_{DP}$ *some book$_i$* [$_{CP}$ that everyone buys *op$_i$* without reading <*PG*>]]. (Parasitic Gap)
some book > everyone, *everyone > some book

(Manzini 1994)

The scope relations in (10) can be paraphrased by assuming that a particular book which every person in a group of people purchased was banned. This cannot have the inverse scope interpretation of there being several books, one of each purchased by a separate member of a group, were all banned. Though it is possible to conceive of this ambiguity, most, if not all native speakers, agree that the first interpretation is the only logical interpretation.

Tough constructions present a challenge then because a 0-op analysis would predict a rigid scope relation (Szabolsci 2003), similar to the one seen in (10-11). However, given the data presented in (12-14), we can see that scope ambiguities are indeed possible and inverse scope might even be preferred.

(12) [$_{CP}$ Something is tough[$_{CP}$ to give to everyone]].
something > everyone, everyone > something

(13) 'One piece of cake is tough to give to 600 people.'

(14) a. 'Meat is tough to give to vegetarians.'
b. 'Vaccines……..children.'
c. 'Weapons……pacifists.'

The tough construction shown in (12) demonstrates the interaction between two scope elements in this particular type of bi-clausal structure. The first, rigid scope structure is represented by a possible example in (13). The second, inverse scope structure can be represented by the pair-list readings given in (14). In (13), the scope relation suggests that there is a single, individual thing which would be difficult to give to every person involved in the action. The second suggests that for each person or group of people there is a single thing would be difficult to give to them.

This difficulty in pinning down what can and cannot be selected for representation by the 0-op and the opportunities for scope ambiguity suggest that 0-op may not be able to adequately describe the operations taking place within tough constructions. However, since the sideward move analysis actually moves the tough-object into a higher clause, it would have the chance to create this type of scope ambiguity. So, though 0-op may be ruled out as a possible method of construal for tough constructions, sideward move is still a potential solution.

2.2 Patterning in tough constructions

Both current analyses would predict that any internal argument of the embedded verb is eligible to become a tough-object. This is due to the nature of the 0-op and sideward move themselves. For the 0-op analysis, we can assume that the 0-op is defined only by what it represents (Montalbetti *et al*. 1982, Hornstein 2001), therefore it could potentially represent anything. For sideward move, this is due to the lack of restrictions on what the edge feature on the embedded CP would attract (Chomsky 2005), thus any internal argument might be allowed to move into the matrix clause and become the subject. As such, both analyses would predict that all of the examples given in (15) are grammatical.

(15) a. Cheesecake is tough to give to Frank.
b. ??Frank is easy to give cheesecake to.
c. *Cheesecake is easy to give Frank.
d. *Frank is easy to give cheesecake.

However, only (15a) is considered grammatical across the board by all native speakers. (15b) is considered ungrammatical by most native speakers, though some do accept this is marginal. This is most likely due to dialectal variation, but this does present an interesting issue which I will cover in a later section. The examples in (15c-d) are considered ungrammatical by all native speakers, regardless of dialect.

These restrictions present a problem for both current analyses. If we were to try other limiting factors, we would also encounter further problems. For example, if we were to limit potential tough-

objects to those which are direct objects, we would include (15c) in this selection. As stated above, this is considered ungrammatical by all. However, if we were to limit ditransitive tough-constructions to the dative constructions, we would include (15b). Again, though this is better than (15d), it is still ungrammatical to most native speakers.

These patterning issues also extend to WH-elements inside ditransitive tough constructions. When we allow tough constructions to become interrogative utterances, we find that an entirely new pattern emerges, one which is shared by all native speakers, as given in (16).

(16) a. What is tough to give to Frank.
b. Who is tough to give cheesecake to?
c. What is tough to give Frank?
d. *Who is tough to give cheesecake?

Unexpectedly, this pattern allows for both direct objects of the embedded verb and for the indirect object in the dative construction to become the tough-object. All native speakers consulted agree on this pattern. The same principles restrictions and predictions for 0-op and sideward move apply in these cases as well, but the difference in the patterning only reinforces this. There is a different element at work here driving the tough constructions process: topic and focus.

3 Topic, focus, and the parallels between tough constructions and ditransitives

3.1 Topic in mono-clausal ditransitives

Before exploring the data, I will provide a brief definition of what topic marking entails in English. It can be best explained by the following:

> 'The topic of a sentence is the thing which the proposition expressed by the sentence is about. Even though this topic definition is derived from the traditional definition of 'subject', the two notions 'topic' and 'subject' cannot be conflated. Topics are not necessarily grammatical subjects, and grammatical subjects are not necessarily topics, at least in languages like English.'
>
> (Lambrecht 1994: 118)

Ditransitives, in mono-clausal structures, are divided into two differing versions in English: the dative construction and the double object construction. The dative relies on the use of a prepositional phrase to identify the indirect object while the direct object is located in a higher position, though still inside of the VP, so as to receive its θ-role (Larson 1988).

When attempting to topicalize one of the two objects in the dative construction, we get the following results.

(18) a. Cheesecake, he gave to Frank.
b. ??Frank, he gave cheesecake to.

The direct object is always able to be topicalized in all dialects, however the indirect object may or may not be topicalized, depending on dialectal variation as mentioned previously. When we add a contrastive topic to the sentence, (19a) becomes clearer while (19b) remains interpretable only to those whose dialect allows the indirect object to be topicalized.

(19) a. Cheesecake, he gave to Frank, but steak, he gave to Joe.
b. ??Frank, he gave cheesecake to, but Joe, he gave steak to.

Unlike the dative construction, double object ditransitives do not allow either object to be topicalized in any instance. Native speaker consultants agree that the examples in (21) are ungrammatical or very confusing and misleading at best.

(21) a. *Fish, he gave frank.
b. *Frank, he gave fish.

These same restrictions on what can and cannot move are found in ditransitive tough constructions. Ditransitive tough constructions only allow for extraction out of a dative construction and never out of a double object construction; identical to that of topicalization in ditransitives. Native speaker consultants agree that the direct object is always allowed to be the tough-object, but depending on dialectal variation, the indirect object in dative tough constructions may be the tough-object as well. This again parallels the patterns of topicalization mentioned in the preceding section, as shown in (16) again.

(16) a. Cheesecake is easy to give to Frank.
b. ??Frank is easy to give cheesecake to.
c. *Cheesecake is easy to give Frank.
d. *Frank is easy to give cheesecake.

The fact that there is no true semantic linking between the tough-object and the matrix adjective implies that it does not belong there semantically, which could allow for topicalization, a pragmatic effect, to occur (Lambrecht 1994).

3.2 Focused elements in mono-clausal ditransitives

Focus implies a pragmatic weighting attached to a certain element of an utterance and can be defined best by the following:

> 'The focus of a sentence, or, more precisely, the focus of the proposition expressed by the sentence in a given utterance context, is seen as the element of information whereby the presupposition and the assertion differ from each other. The focus is that portion of a proposition which cannot be taken for granted at the time of speech. It is the unpredictable or pragmatically non-recoverable element in an utterance. The focus is what makes the utterance into an assertion.'
>
> (Lambrecht 1994: 207)

Some elements have an inherent focus marking in their lexical entry; the most common of which are the wh-elements found in English questions (Chomsky 1977; Lambrecht 1994) and it is these which I will examine in tough constructions. WH-elements work much as we'd expect them to in dative ditransitive constructions. Both the direct object and the indirect object may be replaced with a wh-element to form interrogatives. Examples of this are given in (22).

(22) a. Bob gave flowers to Mary.
b. What did Bob give to Mary?
c. Who did Bob give flowers to?

With the sentence in (22a) serving as a non-interrogative from which we can base our assumptions, we can see that (22b-c) are grammatical for native speakers. The wh-element is a replacement for either the direct or indirect object and moves from its base generated position into the [spec,C] to check the interrogative feature on the matrix C. In order to prevent the derivation from crashing, Do-support is applied at matrix C (Adger 2003).

Unlike their dative counterparts, the double object constructions follow a different pattern for wh-elements. Rather than allowing both the direct and indirect objects to be wh-elements, only the direct object is allowed to be replaced, as seen in (23).

(23) a. Bob gave Mary flowers.
b. What did Bob give Mary?
c. ?/*Who did Bob give flowers?

As in (22), I have included a non-interrogative version (23a) for comparison. While (23b) is grammatical for native speakers, (23c) is regarded as very awkward or ungrammatical by the same speakers. The native speaker consultants expressed a desire to insert the preposition *to* at the end of the sentence to create the dative version (22c). Most native speaker consultants simply consider (23c) to be an unfinished utterance. This can perhaps be seen better when we compare (23) to (24).

(24) a. Bob gave Mary a cold.
b. What did Bob give Mary?
c. *Who did Bob give a cold?

The examples in (24) include a DP with an indefinite determiner. Native speaker reactions to (24c) again mirror those for (23c), but with greater effect. In fact, (24c) is considered more ungrammatical than (23c). This is possibly due to the switch from a bare plural DP to one with a distinct number feature. Though the reasons behind the patterning of wh-elements in double object constructions is intriguing, we can set it aside for further study and need only to recognize that this pattern exists for now.

Tough Constructions containing wh-elements follow the same general restrictions as normal tough constructions, as seen in (25).

(25) a. *What is tough to sleep?
b. What is tough to burn?
c. What is tough to give to everyone?

The tough constructions still require a matrix adjective to c-command an embedded clause with at least a transitive verb and still require a tough-object to appear as the subject in the matrix clause. However, when considering ditransitive tough constructions, we find that the restrictions on wh-elements found in mono-clausal ditransitives still hold, as shown in (26).

(26) a. Flowers are easy to give to Mary.
b. What is tough to give to Mary?
c. Who is tough to give flowers to?
d. What is tough to give Mary?
e. *Who is tough to give flowers?

The examples in (26b-c) are both considered grammatical by native speakers when asked for judgments. (26d) is also considered grammatical by most, if not all native speakers, however native speakers prefer the dative version with the wh-element. (26e) is considered ungrammatical for the exact same reasons as (24c) given above. When asked, native speakers consider it an incomplete sentence and would prefer to add *to* at the end, such as in (22c).

4 Tough constructions as topic / focus with Equi-NP deletion

4.1 Addressing the scope ambiguity

As demonstrated in previous sections, there is a split between the expected scope relations of a bi-clausal tough construction and what native speakers report as their intuitions. The standard analysis proposes that the tough-object is base-generated in the matrix clause as the subject of the matrix verb while sideward movement proposes that the tough-object is base-generated as the object of the embedded verb and then moves to fill the role of the matrix subject. In truth, both may be partially correct.

I propose that two co-referential copies of the tough-object are generated in the derivation: one in the lower clause as the object of the embedded verb and a higher copy as the subject of the matrix verb. The lower copy would behave exactly as we would expect it to, including entering into clause-bound scope relations with other DPs in the embedded clause. It would fulfill the semantic role required of the embedded verb as well. The higher copy would be generated in the subject position of the matrix clause where it would receive case features, but no semantic licensing, which also conforms to the idea that the tough-object is interpreted in the embedded clause as a part of the embedded action. A non-derived example of this is given below in (27).

(27) [$_{CP}$ *Everything$_j$* is tough [$_{CP}$ to give *everything$_j$* to someone]]

4.2 Topic / focus as restrictors

The proposal above ensures the correct scope relations, but it doesn't solve the restrictions in ditransitive tough constructions; namely why dative tough constructions are favored over double object and how wh-elements seem to have similar pattering in mono-clausal ditransitives and tough constructions. In order to ensure that these relationships stay the same, the embedded clauses in tough constructions should undergo topic or focus operations.

For non-interrogative tough constructions, topicalization takes place in the embedded clause and in the matrix clause, again due to the co-referential nature of the copies of the tough-object. The lower tough-object would move, via topic movement, into the CP domain where TopicP resides. It remains there for the duration of the derivation. The higher copy is also topicalized into the CP layer of the matrix clause, where it also remains, as in (28).

(28) [$_{CP}$ [$_{TopP}$ Everything$_i$ [$_{TP}$ <everything$_i$> T is tough [$_{CP}$ [$_{TopP}$ everything$_i$ [$_{TP}$ to give <everything$_i$> to someone]]]]]]

As discussed in Section 3, the nature of topicalization restricts the potential tough construction set to only those generated from the dative construction. The direct object is able to be topicalized without difficulty and the indirect object may also undergo topicalization if dialectal variation permits, yet the double object constructions are correctly ruled out by this method.

The second pattern similarity found between mono-clausal ditransitives and ditransitive tough constructions stems from the limitations imposed by wh-elements in the derivation. These elements contain an inherent focus property which excludes them from being topicalized (Lambrecht 1994). Rather than using topicalization to draw the lower copy of the tough-object into the phase head, the wh-element moves through its own intrinsic operation. Shown in (29), the lower copy is base-generated in the embedded clause and moves to the [spec,C] to check the [+Q] feature found on the embedded C. Then the higher copy is merged into the matrix clause's subject position directly from the Numeration. This copy checks the features on matrix T before moving to check the [+Q] feature present on matrix C. The lower copy is prohibited from moving into the matrix [spec,C] because to do so would violate locality constraints (Chomsky 2005).

(29) [$_{CP}$ What$_i$ C [$_{TP}$ <what$_i$> is tough [$_{CP}$ what$_i$ C [$_{TP}$ to give <what$_i$> to someone]]]]

The parallel between mono-clausal ditransitives and ditransitive tough constructions is also upheld with the wh-elements in place. The dative constructions are allowed across the board while the double object construction only allows the direct object to raise or become the tough-object.

4.3 Equi-NP deletion

First proposed by Rosenbaum (1965, 1967), Equi-NP Deletion (EQUI) concerns the deletion of a co-referential nominal in a different clause than the one in which the nominal is pronounced. EQUI is assumed to be an operation with the following parameters:

a. EQUI operates either *forwards* or *backwards*;
b. EQUI operates on NP if they are *coreferential* to some other NP in a 'higher' sentence, in fact, the immediately 'higher' one;
c. The NP which determines the deletion of the complement subject (henceforth: *the controller* (NP)) must stand in a particular structural configuration with respect to the NP whose deletion it determines;
d. The operation takes place to delete a particular complement subject NP_a *before* NP_a has undergone the rule, process, or whatever it is, of co-referential pronominalization;
e. EQUI is cyclical.

(Postal 1970: 443)

In general terms, EQUI forces a lower copy of a co-referential nominal to delete rather than proceed to PF. This involves a c-command relation between the higher and lower copies of the nominal to ensure that the correct copy is deleted. This can be seen in example (30) below.

(30) It is hard for me to imagine $Besty_i^a$ being willing [for $Betsy_i^b$ to consider [$Betsy's_i^c$ getting herself arrested on purpose]]
'It is hard for me to imagine Betsy being willing to consider getting herself arrested.'
(Akmajian 1972: 374)

Using EQUI we can determine how the process in (30) is achieved. EQUI applies to only *Betsy*^{b} and *Betsy*^{c}. Due to the cyclic nature of EQUI, the controller nominal for *Betsy*^{b} is *Betsy*^{a} and the controller nominal for *Betsy*^{c} is *Betsy*^{b}. During the process, the lower copy is deleted under identity once the immediately higher copy is merged into the structure. This ensures only a single copy of *Betsy* remains at PF while at LF all copies may be accessible for interpretation, as expressed in the parameters for deletion (Richards 2001).

EQUI can be applied to tough constructions using the proposals I have stated above. Given that there are two co-referential copies of the tough-object in the tough construction, one in the matrix clause and another in the embedded clause, EQUI can take place since the higher copy c-commands the lower; ensuring that the higher copy is the controller. Since deletion (or eliding) takes place at PF (Richards 2001), not at LF, the scope relations established within the embedded clause may be interpreted, hence the ambiguous scope in some ditransitive tough constructions. The final derivations of (28) and (29) are shown in (31) and (32) respectively.

(31) $[_{CP}\,[_{TopP}$ Everything$_i$ $[_{TP}$ <everything$_i$> T is tough $[_{CP}\,[_{TopP}$ ~~everything~~$_i$ $[_{TP}$ to give <everything$_i$> to someone]]]]]]
'Everything is tough to give to someone.'

(32) $[_{CP}$ What$_i$ C $[_{TP}$ <what$_i$> is tough $[_{CP}$ ~~what~~$_i$ C $[_{TP}$ to give <what$_i$> to someone]]]]
'What is tough to give to someone?'

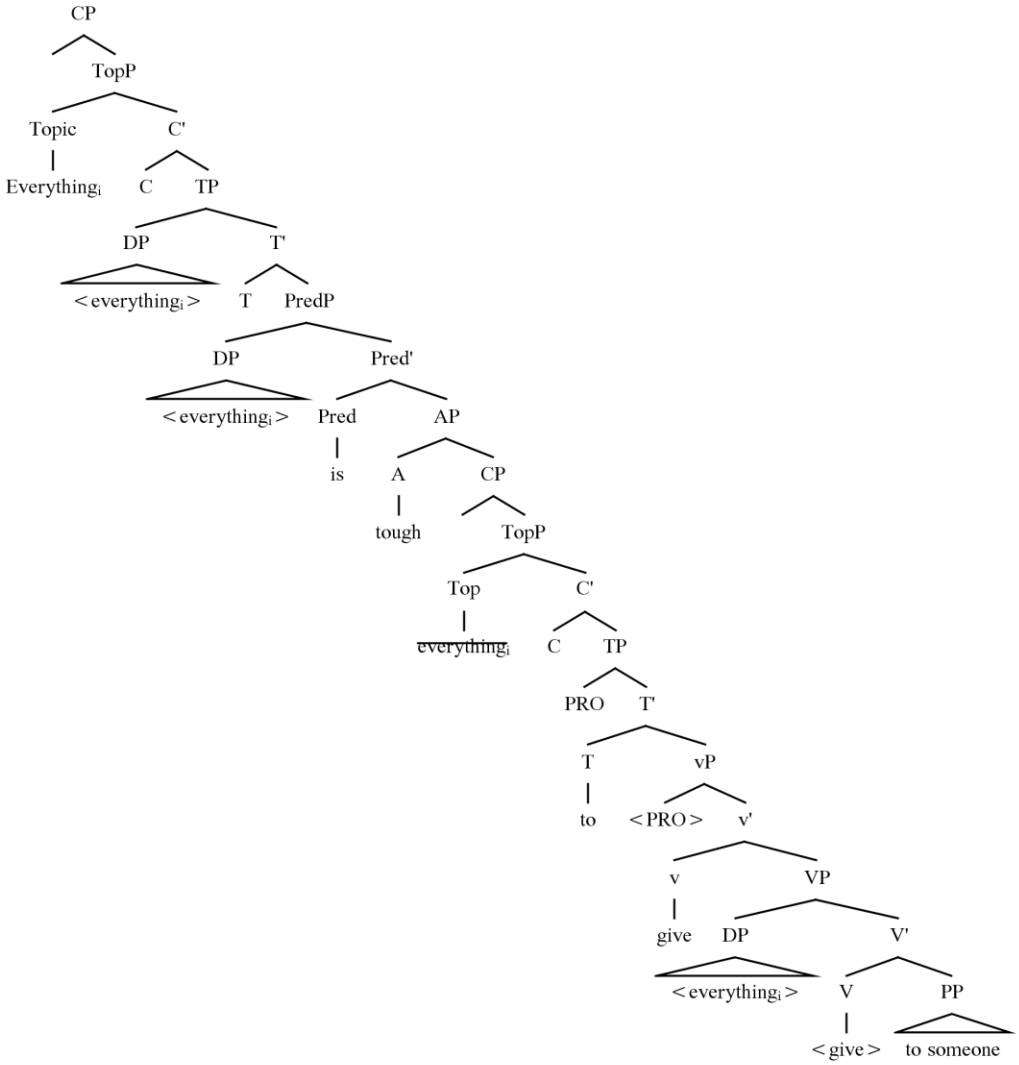
4.4 The full derivational process

In (33), the entire derivational process is laid out for a ditransitive, dative tough construction where the direct object *everything* is the tough object. *Everything* is merged as an internal argument to the embedded VP where it receives its case marking and θ-role assignment, thus linking it into the semantics of the embedded clause. Once the embedded CP is merged in, the tough-object undergoes topicalization to raise it up into the phase edge where it is visible to further operations. The matrix adjective then selects the CP as its complement through edge features on the C (Chomsky 2005).

A second, co-referential *everything* is merged from the Numeration into the structure as the external argument of the matrix adjective where it checks the φ-features of the PredP and receives its case marking after moving to [spec,T]. This higher copy is also topicalized to place it in an equivalent position

to the lower copy. Finally, EQUI selects the higher copy as the controller due to its c-command of the lower copy and deletes the lower copy at PF to preserve the linearity of the utterance.

(33)



5 Expanding the set of tough constructions

5.1 Application to transitive tough constructions

The outlined proposal may also be applied to transitive tough constructions with no modifications required to the theory. Whereas ditransitive tough constructions have multiple objects in the embedded clause, transitive tough constructions only have a single object: the direct object. We have already seen that direct objects are always allowed to become the tough-object, in all circumstances, so this presents no problem.

Having a single tough-object would exclude any scope ambiguities as well, for it would have nothing to compare against. Topicalization will also select the only argument in the embedded clause, thus only one thing may raise into the CP layer; this precludes 'choosing' which object must become the tough-object. The higher copy would still target the lower copy for EQUI, therefore, we would still be left with a single tough-object in the matrix clause at PF, as in (34).

(34) $[_{CP}\,[_{TopP}\,John_i\,[_{TP}\,<John_i>\,is\,easy\,[_{CP}\,[_{TopP}\,\sout{John}_i\,[_{TP}\,to\,find\,<John_i>]]]]]]$

The formation of the derivation in (34) follows along the same lines as that of the ditransitive tough construction in (33). The lower copy of the tough-object is base-generated as an internal argument of the embedded verb, where it receives its θ-role and case marking. It is then topicalized into the CP layer of the embedded clause to make it visible to higher clause operations (Chomsky 2005).

The matrix adjective selects the CP and then the second copy is merged into the subject position of the matrix clause where it checks φ-features and receives a case marking. Finally the higher copy is topicalized, controls the lower copy through a c-command relation, and forces the lower copy to go undergo EQUI. In short, the process is identical, though there is no potential for scope ambiguities or the need to choose between multiple internal arguments of the embedded verb.

5.2 Implications for the analysis

5.2.1 What about intransitives?

The analysis outlined here does not directly rule out intransitive tough constructions. As mentioned in Section 1, we account for this by assuming that the matrix adjective selects only CPs which have edge features with non-finite properties (Chomsky 2005). English finite clauses must have an overt subject, whether they can stand alone or are embedded under another clause. However, non-finite clauses cannot have overt subjects at LF or PF. Examples of these are seen in (35).

(35) a. *We asked he to win.
b. *He tried to attempt Bob to win the race.

The non-finite nature will force the derivation of any embedded non-finite clause with an overt subject to crash. Thus we can assume that by selecting for a non-finite C-T complex, the matrix adjective avoids any potential problems with intransitives.

5.2.2 PF and LF

The analysis presented here ensures that both PF and LF are correctly represented, whatever the type of tough construction may be. The higher copy of the tough-object remains at PF, where it is pronounced with the φ-features that we would expect of the subject in the matrix clause. However, it has no real presence in LF, which given the interpretations of tough constructions, is exactly what we want. The tough-object should not be interpreted as belonging in the matrix clause, nor should it be interpreted as an argument of the matrix adjective.

Instead, the tough-object should be interpreted as an argument of the embedded clause where it becomes a part of the overall meaning. We want the matrix adjective to c-command and describe the entire embedded clause at LF, which includes the internal arguments of the embedded verb. The lower copy serves this function.

The lower copy is base-generated as an internal argument of the embedded verb, so it receives the appropriate θ-role in the process. This position also allows it to participate in scope relations with other internal arguments (if there are any) of the embedded verb. By remaining inside the clause through the derivational structure, the tough-object stays within the reach of the embedded clause's interpretations. To prevent this lower clause from being pronounced and to preserve linearity, we delete the lower copy under identity (EQUI) of the higher copy in the matrix clause.

The combination of these two co-referential copies and the operations they must undergo to preserve the derivation ensures that only one copy is pronounced (at the right place) and only one copy is interpreted (at the right place).

6 Conclusion

The theory presented here asserts that there is more to tough constructions than the apparent movement of one nominal from an embedded internal argument position to the subject position of its matrix clause. By choosing to restrict legal tough constructions to those which may undergo topic or focus movement, it greatly reduces the number of potential derivational process and asserts a clear pattern found in these constructions. Such a theory is supported by evidence of patterns which emerge identically for ditransitives and tough constructions alike. Though the patterns here are strongly correlative, more work into the nature of topic, focus, and discourse patterns found in normal speech is needed.

References

Adger, D. 2003. *Core Syntax*. New York, NY: Oxford University Press.

Akmajian, A. 1972. Getting Tough. *Linguistic Inquiry* 3(3): 373-377.

Chomsky, N. 1973. Conditions on Transformations. In Stephen R. Anderson & Paul Kiparsky (eds.), *A Festschrift for Morris Halle*. New York: Holt, Rinehart and Winston. Reprinted in Noam Chomsky (ed.), (1977) *Essays on Form and Interpretation*, 81-160. New York, NY: North-Holland.

Chomsky, N. 1977. On Wh-Movement. In Peter Culicover, Thomas Wasow, & Adrian Akmajian (eds.), *Formal Syntax*. 71-132. New York, NY: Academic Press.

Chomsky, N. 2005. *On Phases*. Cambridge, MA: MIT Press.

Hornstein, N. 2001. *Move! A Minimalist Theory of Construal*. Malden, MA: Blackwell Publishing Co.

Lambrecht, K. 1994. *Information Structure and Sentence Form*. New York, NY: Cambridge University Press.

Larson, R. 1988. On the Double Object Construction. *Linguistic Inquiry* 19(3): 335-392.

Manzini, M.R. (1994). Locality, Minimalism, and Parasitic Gaps. *Linguistic Inquiry*, 25(3): 481- 508.

Montalbetti , M., M. Saito, & L. Travis. 1982. Three Ways to Get Tough. *Papers from the Regional Meeting of the Chicago Linguistic Society* 18: 348-366.

Nunes, J. 1995. The copy theory of movement and linearization of chains in the minimalist program. Ph.D. Dissertation, University of Maryland at College Park.

Nunes, J. 2001. Sideward Movement. *Linguistic Inquiry* 32(2): 303-344.

Postal, P. M. 1970. On Coreferential Complement Subject Deletion. *Linguistic Inquiry* 1(4): 439-500.

Richards, N. 2001. *Movement in Language: Interactions and Architectures*. New York, NY: Oxford University Press.

Rosenbaum, P. 1965. A Principle Governing Deletion in English Sentential Complementation. *RC 1519*, Thomas J. Watson Research Center, IBM Corporation, Yorktown Heights, N.Y.

Rosenbaum, P. 1967. *The Grammar of English Predicate Complement Constructions*. Cambridge, MA: MIT Press.

Szabolsci, A. 2003. The Syntax of Scope. In Mark Baltin & Chris Collins (eds.), *The Handbook of Contemporary Syntactic Theory*, 607-633. Malden, MA: Blackwell Publishing Co.

Between form and function:
A case study on Chinese rhetorical interrogatives in talk shows in Taiwan[☆]

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This study investigates Chinese rhetorical interrogatives (RI) in a talk show in Taiwan. RIs refer to questions that do not seek information from the hearer. They are posed to show speaker's assertion and thus usually do not expect replies. This paper attempts to analyze how RIs were used in talk shows to achieve semi-institutional (Ilie, 1999:978) interaction. Collected data were classified into five categories: yes-no questions, specific questions, A-not-A questions, tag questions, and alternative questions. It is observed that the functions of these types differed in talk shows and some served multi-functionally. Rhetorical tag questions may serve to give projectability (Sacks et al., 1974) and yield speaking turn. Rhetorical specific questions and yes-no questions were often uttered by the hosts to perform a more face-threatening act. Based on collected data, Chinese RIs in talk shows were found to be used as a conversational strategy to maintain the conversation flow, especially by hosts to perform "infotainment" (Ilie, 1999: 976).

1 Introduction

Questions have been widely discussed in linguistics. In discourse, they are prototypically used to seek information or responses from the interlocutors. Those questions that do not expect answers from the interlocutors and that have substantial underlying statements themselves are called "rhetorical interrogatives" (RI). In the literature, the syntactic, semantic or pragmatic features of RI have been widely explored. Syntactically, RIs share similar interrogative form with ordinary (i.e. standard interrogative) questions. Pragmatically, they could be posed for the speaker to perform illocutionary force of opposite assertion in the original question (e.g. Alleton 1988; Hu, 2008). Some studies from the semantic view have examined RIs with regard to their negative polarity item licensing (Sadock, 1974; Han, 2002). In terms of context, some have approached RIs in English in question-response contexts such as courtroom interaction, political speeches or talk shows (e.g. Ilie, 1994; 1995; 1999). However, studies on Chinese RIs mostly focused on written discourse or drama scripts; rarely did they pay attention to genuine spoken

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discourse or address the function of Chinese RIs in question-response conversations. To explore Chinese RIs in a spoken genre and to differentiate RIs from other non-standard questions as a kind of question-response strategy, this paper attempts to take a corpus-based approach to investigate Chinese RIs in a popular talk show in Taiwan. The investigation focuses on the types, the distribution and the question-answer adjacency pairs of RIs in the talk show, i.e. a semi-institutional discourse (Ilie, 1999:978).

The organization of this paper is as follows: Section 2 reviews literature on types of rhetorical questions in Mandarin Chinese and the nature of talk shows. Section 3 provides the methodology adopted in the present paper and a brief description of collected data. Section 4 discusses the results of collected data. Section 5 summarizes and concludes the findings.

2 Literature Review

2.1 The characteristics of RI

In Mandarin Chinese, Chang (1997) has identified 7 types of question forms in conversation: question-word questions, disjunctive questions, sentence-final particle questions, independent particle questions, A-not-A questions, tag questions, and declarative questions. In some other studies, based on the answers elicited, these question types can be simplified into 4 categories: yes-no questions, specific questions (question-word questions), A-not-A questions, and alternative questions (e.g. Shao, 1995; Liu et al. 1996). All of these question types can form rhetorical interrogatives. What differs lies in that RIs are a kind of interrogation posed with no expectation for reply, performing illocutionary force of opposite assertion (Lü; 1982; Alleton, 1988; Ilie, 1994; Liu et al. 1996; Han, 2002; Chen, 2004; Hu, 2008). When the RI is an affirmative interrogative, it shows negative assertion, and vice versa. In other words, RIs are not used to seek information but for the speaker to convey information. It is regarded as a kind of speaker's expressive style (Freed, 1994; Chang, 1997).

Syntactically, RIs show similar patterns with interrogative questions. Liu et al. (1996) gives a comprehensive study on Chinese RIs, especially their syntactic forms and collocation items. In their study, RIs are also syntactically divided into 4 types: yes-no questions, specific questions (question-word questions), A-not-A questions, and alternative questions. The first type, rhetorical yes-no questions, has standard interrogative form with fixed syntactic constructions such as '*bushi…ma*?' (no...final particle?), "*mei…ma*?" (no...final particle?), "*nandao…(bucheng)*?"(Could it be that…?), "*hai…*"(hard to say), or "…*ma*?" (…final particle?). For example (Liu et al., 1996:468-474):

(1) 還想進去看電影? 你有票嗎?

hai *xiang jinqu kan dianying?* ***ni you piao ma?***

still want enter see movie 2SG have ticket PAR

'Wanna go in and see the movies? Do you have a ticket?' (i.e. You don't have a ticket.)

(2) 我沒告訴過你嗎? 那個地方不能去。

wo ***mei*** *gaosu ni* ***ma****? na ge difang bu neng qu.*

1.SG NEG tell you PAR that CL place NEG can go

'Haven't I told you? Don't go to that place!' (i.e. I have told you.)

(3) 我們死都不怕，難道還怕困難嗎?

women si dou bu pa, ***nan dao*** ***hai*** *pa kunnan* ***ma****?*

1.PL die all NEG fear hard say still fear difficulty PAR

'We do not even fear death. Could it be possible that we fear difficulties?'

(i.e. We do not fear difficulties.)

As examples (1)-(3) show, rhetorical yes-no questions take the yes-no interrogative form. Constructions such as "*bushi…ma*?" or "*mei…ma*?" in (2) express positive assertion; patterns like "*nandao…(bucheng)*?", "*hai…*", or "*…ma*?" as in (1) and (3) display negative assertion.

Rhetorical specific questions often contain interrogative phrases such as *shei* 'who', *nali* 'where', *zheme* 'why; how' and so forth. This kind of rhetorical question sometimes takes complex coordination with *bu* 'no' in the first clause. For instance:

(4) 這件事，我什麼時候告訴他了?

zhe jian shi, wo ***shema*** *shihou gaosu ta le?*

this CL matter 1SG what moment tell 3SG PAR

'As for this matter, when did I tell him?' (i.e. I never told him.)

(5) 這篇文章哪兒難啊?我看一年級的學生都能看懂。

zhe pian wenzhang ***naer*** *nan a!*

this CL article where difficult PAR

wo kan yi nianji de xuesheng dou neng kan dong

1SG see one grade NOM student all can see understand

'Why is this article difficult? I think even the first graders can understand it.'

(i.e. This article is not difficult at all.)

(6) 外邊不下雨了，還穿什麼雨衣?

wai bian bu xiayu le, hai chuan ***shema*** *yuyi?*

outside side NEG rain ASP still wear what raincoat

'It's already not raining outside. Why bother wearing a raincoat?'

(i.e. There is no need to wear a raincoat.)

(4)-(6) derive rhetorical reading with interrogation to show the speaker's negative assertion. The following example, (7), shows rhetorical reading by using complex coordination in Chinese, stressing the positive assertion in the first clause:

(7) 我不這麼辦怎麼辦?

wo ***bu zheme ban***, ***zeme*** *ban?*

1SG NEG such handle such handle

'If I don't do so, what else can I do?' (i.e. This is only what I can do.)

Rhetorical A-not-A questions, containing syntactic A-not-A form in the clause, can be used to express two kinds of affirmative assertion. One usually occurs with *kan* 'see', *ni kan* 'you see', *ni shuo* 'you say' or *ni xiang* 'you think' in the sentence initial position in order to persuade co-participants or to expect for same reaction from them as in (8).

(8) 我自學了兩個月漢語就當翻譯，你想想我的困難大不大?

wo zhi xue le liang ge yue hanyu jiu dan fanyi,

1SG only study ASP two CL moon Mandarin only be translate

ni xiang xiang, *wo de kunnan* ***da bu da****?*

2SG think think 1SG NOM difficulty big not big

'I've only studied Mandarin for two months and now I am a translator.

Do you think I would face great difficulties or not?' (i.e. Of course I am in great difficulty.)

The phrase *shibushi*, functioning like a tag question also asserts the fact mentioned is not out of expectation. It does not occur in sentence initial as in (9):

(9) 我就知道你準得趕來，是不是？

wo jiu zhidao, ni zhun de gan lai, ***shi bu shi****?*

1SG just know 2SG correct ASP hurry come yes not yes

'I just know that you should come in a hurry, right?'

(i.e. You are expected to come in a hurry.)

Here, Liu et al. (1996) incorporated rhetorical A-not-A tag into the A-not-A category. However, it has been observed that Chinese question tags, such as *hao-bu-hao* '好不好; good-no-good', *dui-bu-dui* '對不對; correct-no-correct', *you-mei-you* '有沒有; have-no-have', *shi-bu-shi* '是不是; yes-no-yes', have been grammaticalized. They are frequently used to express subjectivity (Hu, 2003) and perform different pragmatic functions from traditional question tags. According to Hu (2003), these question tags have two functions. One is canonical use, serving propositional requesting functions. The other is attitudinal function, showing the speaker's expressiveness. Therefore, rhetorical A-not-A question tags should be categorically separated from other A-not-A forms in the medial position of sentences.

The last type, rhetorical alternative questions, list two or more situations in a sentence and they

would all be negated to show the speaker's underlying assertion. For example:

(11) 我跟你是親戚，是老朋友，還是我欠你的?

wo gen ni ***shi*** *qinqi,* ***shi*** *lao pengyou,*

1SG follow 2SG COP relative, COP old friend

hai shi *wo gian ni de?*

still COP 1SG owe 2SG NOM

'Am I your relative, your friend or is it because I owe you?'

(i.e. I'm neither your relative nor your friend. Neither do I owe you.)

All the possible scenarios are negated in (11) by the speaker. However, in (12), the speaker generally prefers the second scenario among proposed ones. Usually, the speaker speaks with a questioning, discontent or condemning tone:

(12) 他是來解決問題啊，還是來打架啊?

ta ***shi*** *xiang jiejue wenti a,* ***hai shi*** *xiang dajia a?*

3SG COP think solve problem PAR still COP think fight PAR?

' Does he want to solve the problem or to have a fight?'

(i.e. The speaker thinks that this person seems to make more troubles rather than to solve the problem.)

The study of Liu et al. (1996) has shown that basically all kinds of question types can form RIs, and they frequently go with some certain collocating phrases. However, all the discussion concerns only single-sentence contexts instead of discourse. It is thus limited in showing the interpretation of RIs and the functions of RIs in natural discourse contexts.

Since RIs syntactically pattern alike with standard interrogatives, the discourse context and the intonation in sentences become very important to distinguish RIs from standard interrogatives (Shao, 1996;Chen, 2004; Han, 2002; Jai, 2008). Take (4) for instance. In (4), the sentence can derive both regular meaning "When did I tell him" in one context, (e.g. I don't remember), or rhetorical meaning "I didn't tell him" in another (e.g. I assert there was no such a moment). Therefore, Shao (1995) proposes that RIs could be constrained either by the preceding discourse or by the following discourse context, which gives exposition or negation of the RI. The immediate speech context and the speaker's personality or stance could also affect the hearer's interpretation of RIs.

On the suprasegmental level, RIs have intonational features in contrast with standard interrogatives (Alleton, 1988; Han, 2002; Chen, 2004). While standard interrogatives go with rising intonation in the sentence final position, RIs have a falling intonation. The rhetorical yes-no interrogatives even have high-rising intonation in the end. Therefore, in addition to the syntactic categories and pragmatic

difference, the differences resulting from the discourse and intonation should also be taken into consideration in the analysis of RIs.

2.2 The nature of talk shows

In some literature, rhetorical interrogatives in English were investigated in question-response contexts such as courtroom interaction, political speeches or talk shows (e.g. Ilie, 1994; 1995; 1999). RIs in these contexts are used to display power relations. In political speeches and courtroom cross-examination, they display "opinion manipulation"; however, they are mostly used to modify arguments and influence "public opinion" (Ilie, 1999:979) in talk shows.

Meanwhile it is noted that rhetorical questions in these above discourse types would be constrained by institutional patterns except in talk shows. Ilie (1999) argues that talk shows are semi-institutional. On one hand, they obey institutional turn-taking rules and create topic-centered discourse as other institutional discourse. In addition, while the institutional discourse is often information-oriented, talk shows display "infotainment", a combination of information and entertainment, which is different from institutional discourse. On the other hand, they show specific features of conversational discourse, such as "spontaneous role-switching and question asking initiated by show guests and the audience's shifting roles as both addressee and addresser" (Ilie,1999: 976). She also notices in her study that talk shows exhibit a large number of non-standard questions. Such a rich variety results from the complicated interaction among the host, guests, or even the audience. Ilie (1999) further analyzes these non-standard questions, i.e. RIs, expository questions and echo questions, based on pragmatic adequacy, question-response adjacency pairs (Schegloff, 1972), and argumentation orientation. In these non-standard questions, RIs are reported to elicit from the addressee nonverbal, emotional responses. On the speaker's side, they can express the speaker's judgment or underlying statements.

In general, Illie (1999) discusses RIs under a pragmatic framework with naturally-occurring data. However, Ilie's discussion focused only on the argumentative functions of RIs. In addition, previous studies on Chinese RIs mostly approached the issue with written discourse or a written-to-be-spoken discourse such as drama scripts, which are less authentic. In light of the studies discussed above, the present study attempts to explore the functions of Chinese RIs in talk shows, a more natural discourse.

3 Method

This paper takes a corpus-based approach to analyze the types and the distribution of Chinese rhetorical interrogatives in the talk shows, a kind of semi-institutional discourse. The data for the present study were naturally-occurring conversations collected from several episodes of one Taiwanese television program, *Kang-xi-lai-le,* in fall 2008. The data bank amounts to 90 minutes in total. This program is interview-based with two hosts and one or several guest interviewees. No audience is involved in this talk

show. To avoid discrepancy resulting from different settings in the film studio, only episodes with interviewees sitting in line facing the hosts were collected. All the question-response pairs throughout the interviews were extracted and classified into standard interrogatives or rhetorical questions based on the context, the intonation and the question-response pairs. All the RIs were classified into 5 categories: yes-no questions, specific questions, A-not-A questions, tag questions, and alternative questions. In the following section, K and S represent the male host and the female host respectively, while other letters are randomly chosen to stand for the interviewees.

4 Results & Discussion

366 tokens of questions were collected for the present study. The collected data are summarized in Table 1:

pragmatic type \ syntactic type		**Yes-no question**	**Specific question**	**A-not-A question**	**Tag question**	**Alternative question**	**Others**	**Total**
Standard interrogative	Host	83 (45%)	49 (27%)	7 (4%)	7 (4%)	3(2%)	22(12%)	181 (100%)
	guest	7 (4%)	2 (1%)	0	0	0	1 (1%)	
	Total	**90 (50%)**	**51 (28%)**	**7 (4%)**	**7 (4%)**	**3 (2%)**	**23(12%)**	
Rhetorical interrogative	Host	35 (20%)	56 (31%)	8(4%)	52 (29%)	1(1%)	0	179 (100%)
	guest	9 (5%)	3 (2%)	0	15 (8%)	0	0	
	Total	**44 (25%)**	**59 (33%)**	**8 (4%)**	**67(37%)**	**1 (1%)**	**0**	
Others	Host	0	0	0	0	0	0	6 (100%)
	Guest	0	6 (100%)	0	0	0	0	
	Total	**0**	**6 (100%)**	**0**	**0**	**0**	**0**	

Table 1. The distribution of questions in the talk show in Taiwan

As Table 1 shows, there were 3 kinds of question types identified in the corpus—standard interrogatives, rhetorical interrogatives and others. Standard interrogatives were used to elicit information and answers were expected. Other tokens in the category of standard interrogatives included those statements with rising intonation, which also served to seek information. For instance:

(13) →K:請問郭彥均有拍嗎?

qing wen guoyanjun you pai ma ?

please ask NAME have pat PAR

'Has Guoyanjun taken (this kind of studio photos)?'

G:郭彥均他也有拍啊!

guoyanjun ta ye you pai a !

NAME 3SG too have pat PAR

'Guoyanjun has, too!'

→K:他也拍這個嗎?

ta ye pai zhe ge ma ?

3SG too pat this CL PAR

'Did he also take this (kind of photos)?'

G:他比我還早拍!

ta bi wo hai zao pai

3SG compare 1SG again early pat

'He did it earlier than me.'

→K:也穿這個?

ye chuan zhe ge ?

too wear this CL

'also wore this?'

G:他應該沒有穿這個。

ta yinggai meiyou chuan zhe ge

3SG should NEG wear this CL

'He probably didn't wear this (kind of clothes).'

In the first and second conversation turn between K and G, K tried to obtain some information by asking a standard yes-no interrogative and G responded K's question. In the third turn, K asserted a statement with rising intonation, which also served as a question.

RIs are those questions that show the speaker's assertion and do not expect answers as shown in (14):

(14) K:那你要走什麼路線?

na ni yao zou sheme luxian ?

then 2SG want walk what path

'Then, what style would you have?'

H:我唱歌好了。

wo chang ge hao le

1SG sing song good PAR

'I'll just sing.'

→K:誰要聽你唱歌啊?

shei yao ting ni chang ge a

who want listen 2SG sing songs PAR

'Who wants to listen to your singing?' (i.e. Nobody wants to listen to your singing.)

Others included expository questions, which did not seek information and did not show the speaker's expressiveness. They were found in the corpus to be a kind of discourse marker to create a "conversational focus" (Freed, 1994:629) to draw the hearer's attention to the upcoming informational content. For instance:

(15) G: 為什麼他準備這個? 我覺得它是可以高矮、高矮胖瘦都可以穿。

weisheme ta zhunbei zhe ge ? wo juede ta shi keyi gao ai
Why 3SG prepare this CL 1SG think 3SG COP can tall short
gao ai pang shou dou keyi chuan
tall short fat think all can wear
'Why did he prepare this? I think it (a bathing gown) can fit people of all kinds.'

Table 1 also indicates that the total tokens of standard interrogatives and rhetorical interrogatives were roughly even. However, the use of the six syntactic question types differed in the two categories. In the category of standard interrogatives, yes-no questions were the most frequently used type to elicit information from the hearers. Specific questions and statements with rising intonation were also commonly used in the interview. A-not-A questions, tag questions and alternative questions were rarely adopted.

The category of rhetorical interrogatives showed a different tendency. Most of the rhetorical interrogatives were rhetorical tag questions. The second frequently used type was specific questions. Rhetorical yes-no questions also took up a fairly high percentage, yet they were far less than standard yes-no questions. Most of them were used by the hosts to express the speaker's assertion. Examples (16) and (17) show the use of rhetorical tag questions and specific questions:

(16) S: 你幹嘛?你現在這樣顯得我很賤，你知不知道? 好人都給你當了，是不是?

ni ganma? ni xianzai zheyang xian de wo hen jian, ni
2SG what 2SG current so reveal COV 1SG very bitch 2SG
zhi bu zhi dao? hao ren dou gei ni dang le, ***shi bu shi****?*
know no know say good person all give you be ASP yes NEG yes
'What are you doing now? Do you know you make me look like a bitch? Then you can be the good guy, right?'
(no replies.)

(17) S: 你怎麼有臉來上我們節目啊?

ni zenme you lian shang women jiemu a?
2SG why have face up 1PL program PAR
'Why dare you come to our show?'

G: 你們有臉邀請我，我就來啊!

nimen you lian yaoqing wo, wo jiu lai a!

2PL have face invite 1SG 1SG just come PAR

'You have the courage to invite me, then of course I dare come!'

In such a confronting situation, answers were usually not expected and were rarely responded. However, the rhetorical interrogatives could be answered once the hearer canceled the rhetorical reading as in (17).

As presented in Table 1, whatever question types were used, almost all of the questions were initiated by the hosts. This shows the nature of semi-institutional discourse in which the hosts are assigned the role of question-proposing and the interviewees the role of responding. It is role-assigned and rule-governed (Ilie, 2001), yet the speaking right was flexible. Interviewees could also ask questions though there were few.

Rhetorical interrogatives were found to frequently occur in the talk show. It is worth noting that while some RIs performed pure rhetorical function, some RIs serve more than one function. They were multifunctional in a way that they showed the speaker's assertion and they also served other functions of questions. The distribution of canonical RIs and multifunctional RIs in the databank is summarized in Table 2:

syntactic type / pragmatic type		**Yes-no question**	**Specific question**	**A-not-A question**	**Tag question**	**Alternative question**	**Total**
Canonical RI	Host	32	50	8	11	1	**114 (64%)**
	guest	5	3	0	4	0	
	Total	**37 (84%)**	**53 (90%)**	**8 (100%)**	**15 (22%)**	**1(100%)**	
Multifunctional RI	Host	3	6	0	41	0	**65 (36%)**
	guest	4	0	0	11	0	
	Total	**7 (16%)**	**6 (10%)**	**0**	**52 (78%)**	**0**	
Total		**44(100%)**	**59 (100%)**	**8 (100%)**	**67(100%)**	**1 (100%)**	**179(100%)**

Table 2. The distribution of canonical RIs and multifunctional RIs in the talk show

As suggested in Table 2, canonical use of RIs were mostly performed with rhetorical specific questions and rhetorical yes-no questions. When the canonical RIs were uttered, mostly by the hosts, they were used to express speaker's assertion or evaluation over the interviewee's statements and to perform a face-threatening act. They were usually not answered. In fact, in the video, they were often followed by laughter, canned laughter or exaggerated signs on screen, which served to produce entertainment and mitigation. (18) is an instance when the interviewee showed some of his photos in the past, the speaker used a rhetorical specific question to tease the interviewee in order to achieve entertainment:

(18) K: 好丟臉啊，你這是想幹嘛?

hao diu lian o, ni zhe shi xiang ganma?

good throw face PAR you this COP want why

‘ Shame on you! Why on earth are you doing this?’

S: 你憑什麼?你是白蛇啊你?你這是想幹嘛?

ni ping sheme a? ni shi bai she a ni?

you lean what PAR you COP white snake PAR you

ni zhe shi xiang ganma?

you this COP want why

‘Who do you think you are? Why did you do that? Are you Snake White? Why on earth are you doing this?’

(Hosts and guest interviewees are laughing.)

On the other hand, some RIs perform multi-functionally. The most frequently used were rhetorical tag questions. They performed the rhetorical function as well as other functions, such as “topic introduction” or “confirmation of information” (Chang, 1997: 46) at the same time.[1] In addition, rhetorical question tags were easily perceived as a turn-taking point since they occur in the sentence-final position (Sacks et al., 1974). Thus, in the talk show they were often manipulated by the hosts to yield the speaking turn in order to maintain the conversation flow. In this way, the hosts could both achieve entertaining purpose with rhetorical function and elicit information from the interviewees. “Infotainment” (Ilie, 1999: 976) was thus achieved.

In (19), the RI was adopted to introduce a topic:

(19) K:有了部落格之後，很多路人減少了一種負擔，就是沒有部落格的時代，大家拍了美麗的沙龍照，都要洗出來，然後強迫送給朋友，對不對?

you le buluoge zhihou ne, hen duo luren jianshao

have ASP blog afterward PAR very much passers-by decrease

le yi zhong fudan, jiu shi mei you buluoge de ,

ASP one kind burden just COP NEG have blog NOM

shidai dajia pai le meili de shalongzhao, dou

era everyone pat ASP beautiful NOM studio photos all

yao xi chu lai, ranhou qiang po song gei pengyou,

want wash out come then force send give friend

[1] In Chang (1997), she identifies 14 functions of questions in Mandarin Chinese. The 14 question functions are: Public information, Social information, Deictic information, Clarification of information, Asking for repetition of information, Confirmation of information, Topic introduction, Conversational focus, Shared information, Didactic, function, Rhetorical function, Reported speech, Self-directed function and Greeting. In her study, each question was identified with only one function. However, it is observed in this study that some rhetorical interrogatives can serve rhetorical function and the function of topic introduction or confirmation of information at the same time.

dui bu dui?

yes NEG yes

'After the invention of blog, people do not feel stressed anymore. When there was no blog, people had to develop photos and forcefully gave them to friends, right?

S: 我也經歷過那個年代…

wo ye jingli guo na ge niandai

I too experience ASP that CL era

'I also had gone through that time.'

In (19), the host K used a rhetorical tag question not to confirm his own statement but to introduce the topic and to yield the speaking turn. Similar phenomenon could be seen in (20):

(20) G:我是 "ging"[2] 到後面才去拍，因為我覺得拍那個好娘哦!

wo shi 'ging' dao hou mian cai qu pai, yinwei wo

1SG COP insist arrive back face just go pat because 1SG

juede pai na ge hao niang o

feel hit that CL good mother PAR

'I didn't take studio photos until later because I think that is so sissy.'

→S:所以當朋友秀出照片的時候，你心裡很羨慕，可是你硬裝作不想拍，是不是?

suoyi dang pengyou xiu chu zhaopian de shihou

so when friend show out photo NOM moment

ni xin li hen xianmu, keshi ni ying zhuang zuo

2SG heart inside very envy but 2SG hard pretend make

bu xiang pai, shi bu shi?

no want hit, yes NEG yes?

'So when your friends show their photos, you envy them. But you just pretend you don't want to do it, right?

G: 我那時候覺得如果條件那麼好的話，根本就不用留住什麼青春。

wo na shihou juede, ruguo tiaojian name hao de

1SG that moment feel if condition then good NOM

hua, gen ben jiu bu yong liu zhu zhe sheme qingchun

word root origin only no use leave live this what youth

'I thought at that moment if I got such good conditions, I had no need to take photos to commemorate my youth.'

[2] The word 'ging' is borrowed from Mandarin Min, meaning "hold" or "persist". There is no corresponding form in Chinese.

In (20), actually the host S uttered a rhetorical interrogative intonationally, showing her assertion and mocking the interviewee. However, the question tag produced projectability (Sacks et al., 1974) and it was received as a turn-taking point or as a confirmation of information by the hearer. Therefore, the hearer responded.

In the collected data, rhetorical interrogatives were found to be frequently used by the hosts to perform entertainment. They were also manipulated as a turn giver by the hosts to maintain the conversation flow and achieve "infotainment".

5 Conclusion

This study analyzed Chinese rhetorical interrogatives with naturally-occurring data in a talk show. It is observed that rhetorical interrogatives were frequently used in the talk show. While rhetorical specific interrogatives and rhetorical yes-no interrogatives were used by the speakers to perform pure rhetorical function, performing entertainment and expressing his or her assertion, rhetorical tag questions were used to perform multiple functions. They were used to introduce a new topic or to confirm information along with their rhetorical expressiveness. With the use of rhetorical interrogatives, the hosts easily performed "infotainment" (Ilie, 1999:976) and played the assigned institutional roles.

References

Alleton, Viviane. 1988. The so-called "Rhetorical Question" in Mandarin Chinese. *Journal of Chinese Linguistics*16, 278-297.

Chang, Chung Yin.1997. A discourse analysis of questions in Mandarin Conversation. Master Thesis. Taipei: National Taiwan University.

Chen, Huai Shuan. 2004. Hanyu fanwenju xingshi yu yiyi fenxi. MA Thesis. Taipei: National Taiwan Normal University.

Freed, Alice F. 1994. The form and function of questions in informal dyadic conversation. *Journal of Pragmatics* 21: 621-644.

Han, Chung Hye. 2002. Interpreting interrogatives as rhetorical questions. *Lingua* 112, 201-229.

Hu, Ching Chi. 2003. Question tags in Taiwan Mandarin: Discourse functions and grammaticalization. MA thesis. Taipei: National Taiwan Normal University.

Hu, De Ming. 2008. Fanwenju de yuyong jiazhi-youdaoxin yu yinhanxin. *Xiucixuexi* 148, 36-40.

Ilie, Cornelia. 1994. What else can I tell you? A pragmatic study of English rhetorical questions as discursive and argumentative acts, in *Stockholm studies in English*. Stockholm: Almqvist and

Wksell International.

Ilie, Cornelia. 1995. The validity of rhetorical questions as arguments in the courtroom, in *Speical fields and cases: Proceedings of the third international ISSA congerence on argumentation*, eds. by F. H. van Eemeren, R. Grootendorst, J. A. Blair and C.A. Willard, 73-88. Amsterdam: SIC SAT.

Ilie, Cornelia. 1999. Question-response argumentation in talk shows. *Journal of Pragmatics* 31, 975-999.

Ilie, Cornelia. 2001. Semi-institutional discourse: The case of talk shows. *Journal of Pragmatics* 33*,* 209-254.

Jai, Mei Ling. 2008. Study on the rhetorical question in teaching Chinese as a second language. Unpublished MA Thesis. Shandong: Shan Dong University.

Liu, Yuehua, Wenyu Pan and Wei Gu. 1996. *Shiyong xiandai hanyu yufa*. Taipei: Jianhong shuju.

Lü, Shuxian. 1982. *Zhongquo Wenfa Yaolüe*. 1st ed. in 1942. Beijing: Shangwu yinshuguan.

Sacks, Harvey, Emanuel A. Schegloff and Gail Jefferson. 1974. A simplest systematics for the organization of turn-taking for conversation. *Language* 50.4: 696-735.

Sadock, Jerrold. M. 1974. *Towards a linguistic theory of speech acts*. New York: Academic Press.

Schegloff, E. A. 1972. Sequencing in conversational openings. *Directions in sociolinguistics: The ethnography of communication,* eds. by J. J. Gumperz and D. Humes, 346-380. New York: Holt, Rinehart and Winston.

Shao, Jing Min. 1995. *Xiandai hanyu yiwenju yianjiou.* Shanghai: Huadong Shida qubanshe.

Tone and tonogenesis in Bhutan: degrees of tonality?

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The Tibeto-Burman languages of Bhutan have received little attention in academia, due in large part to the closed nature of the country. However, recent research in Bhutan has brought some of these languages, in particular their phonologies and tonal systems, into light. Most of these languages are undergoing tonogenesis, providing an ample opportunity to explore tonogenesis in detail and build off of the ideas put forth in Haudricourt (1954), Thurgood (2002), Kingston (2004) and Hyslop (2009), among many others. This article describes and compares the tonal systems and tonogenetic properties of some otherwise little-described Tibeto-Burman languages based on data collected in and around Bhutan. Mainly, we notice that although languages are closely related, they may develop different tonal systems via different pathways, leading us to the observation that languages vary with respect to their degrees of tonality, that is, what sort of functional weight tone has in the language.

1 Introduction

Until recently, very little was known about the ethnolinguistic diversity of the Kingdom of Bhutan. For example, it was only in 1991 that George van Driem (1991) identified 19 languages in Bhutan, and since then, grammars of two (van Driem 1998; Andvik 1999) have been published, with a third in preparation (Hyslop to appear b). This previous work has described marginal tonal systems, with at least one being analyzed as currently undergoing tonogenesis (Hyslop 2009 for Kurtöp). This article will build off the previous descriptive work to compare and contrast the tonal developments in some of Bhutan's Tibeto-Burman languages.

Some of the mechanisms and motivations underlying tonogenesis have been established over the last several decades by such pioneering work as Maspero (1912), Haudricourt (1954), Matisoff (1970), Mazaudon (1977), Hombert (1978), Matisoff (1999), Kingston (2004) and many others. Conventional wisdom suggests that tone usually enters a language via lost coda consonants, which condition contour tones. Later, the tones may be split, with high register being diachronically conditioned by voiceless initials and low register being conditioned by voiced initials. Thurgood (2002) recently updated the model by arguing that voice quality plays a mediating role in tonogenesis. That is, between a contrast in voicing on a consonant and tone on a vowel, an intermediate stage of contrastive voice quality on the vowel is present.

This article will describe the synchronic tonal systems of Dzongkha, East Bodish languages, and Tshangla while tracing their tonogenetic pathways. Despite being closely related, and spoken within geographically proximate communities, these languages vary greatly with regard to the complexity of their tonal systems and the number of phonological environments through which tonogenesis was conditioned. For example, Tshangla only reports a high/low tonal contrast for a very small subset of words, and those words have a limited phonological shape (Andvik 2003), while Dzongkha reports a high/low and rising/falling contrast, with tonal contrast possible for every syllable shape. In describing these tonal systems and their tonogenetic properties, this article raises the following question: 'why do otherwise similar languages develop different tonal systems via different pathways?' while also addressing what sort of phonological environments condition tonogenesis in the languages of Bhutan.

2 Tonal Systems of Languages of Bhutan

2.1 Languages of Bhutan

Bhutan, a small, land-locked Himalayan kingdom, is home to at least 18 languages, depending on mutual intelligibility and the meaning of language versus dialect in the country. Excluding Nepali, spoken by recent migrants to Bhutan's southern border area, all of Bhutan's languages belong to the Tibeto-Burman family. These languages, and the sub-family within Tibeto-Burman to which they belong, are summarized in Table 1 below.

Language	Family
Dzongkha	Central Bodish < Bodic
Chocangaca	Central Bodish < Bodic
Brokpa	Central Bodish < Bodic
Lakha	Central Bodish < Bodic
Tibetan	Central Bodish < Bodic
Black Mountain	East Bodish < Bodic
Kurtöp	East Bodish < Bodic
Bumthang	East Bodish < Bodic
Khengkha	East Bodish < Bodic
'Nyenkha	East Bodish < Bodic
Chali	East Bodish < Bodic
Dzala	East Bodish < Bodic
Dakpa	East Bodish < Bodic
Tshangla	< Bodic
Lhokpu	< Bodic
Gongduk	Unclassified
Lepcha	Unclassified

Table 1. Tibeto-Burman languages of Bhutan and their placement within the family

What is immediately obvious from the above table is that most of Bhutan's languages belong to either Central Bodish or East Bodish sub-families. Two other languages, Tshangla and Lhokpu, are classified as belong to the Bodic branch of Tibeto-Burman (like East Bodish and central Bodish languages) but are unclassified within Bodic. Gongduk (van Driem 2001: 465) and Lepcha (Plaisier 2007) remain unclassified within Tibeto-Burman.

The geographical distribution of some of these languages is summarized by Figure 1 below. Note that in the map in Figure 1, the Central Bodish language Dzongkha is spoken in the western third of the country. Other Central Bodish languages are spoken in pockets in the central and eastern portions of the country. The East Bodish languages of Khengkha, Bumthang, Kurtöp, Chali, Dzala and Dakpa are spoken throughout a contiguous continuum, starting with Khengkha in the south and moving clockwise around to Dakpa (mainly spoken in Arunachal Pradesh, India) in the northeast. Tshangla is spoken by a large population in the southeast of the country. Lepcha, like most of the other unclassified Tibeto-Burman languages of Bhutan, is spoken by a small, isolated community. Lepcha is represented by a small shape in the southwest corner of the country. Only the languages mention here (i.e. Dzongkha, Khengkha, Bumthang, Kurtöp, Chali, Dzala, Dakpa, Tshangla and Lepcha) will be further discussed in this article.

Figure 1: The approximate location of the Tibeto-Burman languages of Bhutan. These boundaries are only rough estimates, based off van Driem (1998) and my field notes.

2.2 Central Bodish Tonal System

The Central Bodish tonal system is represented by that of Dzongkha. The tonal systems of Brokkat, Brokpa and Lakha remain unstudied. The tonal system of Lhasa Tibetan, also a Central Bodish language, is like that described here for Dzongkha, in that it contrasts high and low tone, with level and falling contours (DeLancey 2003).

Tone in Dzongkha is heavily associated with consonant type, and as such is described here as being a property of syllables. Dzongkha contrasts high and low register tone following sonorant consonants, with high toned sonorants also being associated with glottalization. Following voiced initials tone is low, but may be extra low and associated with breathy voice[1] or simply low with modal phonation. That is, two distinct low tones are contrastive following voiced obstruents. Following voiceless initials tone is always high. Finally, on top of any of these contrasts (high tone, low tone, low tone with breath voice) the tone may consist of a rising or falling contour. These observations are corroborated in Mazaudon and Michailovsky (1988), Watters (1996) and van Driem (1998), though each presents a slightly different analysis. The data in (1-2)[2] illustrate the high/low tone following sonorants. The data in (3-5) illustrate high tone following a voiceless initial and the tonal contrast following voiced initials. In (6-7) a contrast in contour is shown.

[1] This breathy voiced is almost always associated with devoicing of the initial syllable, suggesting that Dzongkha is following a tonogenetic pathway here similar to that described for Vietnamese in Thurgood (2002). That is, a voiced initial will trigger low tone and breathy voice on the ensuing vowel and the initial consonant will devoice. As an intermediary stage between a voiced segment and an atonal vowel and a voiceless segment and low-toned vowel, then, the contrast will be one of voice quality (e.g. breathy voice).

[2] The data presented in this article are represented in the IPA, unless otherwise specified. Before the IPA, the register of the tone (H = 'high'; L = 'low') is noted. High and low tone is then redundantly marked on the vowel. A falling contour if indicated on the vowel using the IPA (ˆ). If a contour is not marked, it is assumed to be a level tone.

(1) H ʔlý: ‘dough.deity’
(2) L ly: ‘compost’

(3) H pá:ʔ ‘meat slice’
(4) L bà ‘target’
(5) L bà ~ pa̰ ‘cow’

(6) H ká:m ‘leg’
(7) H kâ:m ‘star’

2.3 East Bodish tonal system

The East Bodish languages Kurtöp, Bumthang, Khengkha, Dakpa, Dzala and Chali share a tonal system which exhibits less contrasts than the Central Bodish languages. I have no field notes for ’Nyenkha and Black Mountain, but given the fact that the other languages in the family report a nearly identical system, I suspect ’Nyenkha and Black Mountain would have a similar tonal system as well.

Data from Kurtöp and Dakpa will be used to illustrate the East Bodish tone system, which is characterized as follows. Tone (high/low) is contrastive on the first syllable of words, following sonorant consonants. Unlike in Dzongkha, there does not appear to be salient glottalization concomitant with high tone. Although long vowels do contrast, at least in some dialects of Kurtöp, there are contrasts of short versus long vowels in open syllables, in addition to the tonal contrast. Following obstruents, tone is not contrastive but instead predictable. As shown in Hyslop (2009), high tone follows voiceless initials and low tone follows voiced initials. The only exception to this generalization is for the palatal fricative, for which only a voiceless segment is found which contrasts high or low tone on the following vowel. As I articulate in section 3, I have previously analyzed Kurtöp to have contrasted a voiced and voiceless palatal fricative. However, this contrast has been replaced with a tonal contrast (high/low) and the previously voiced palatal fricative has devoiced. Kurtöp data in (8-11) show contrastive tone following sonorant consonants and predictive tone following obstruents.

(8) H ná ‘nose’
(9) L nà ‘ear’

(10) H pá: ‘meat.slice’
(11) L bà ‘target’

An identical system is found in Dakpa[3,4], Chali, Dzala, Bumthap[5] and Khengkha. Some Dakpa data also show this contrast in (12-15) below. To date, no East Bodish languages have been found with a system similar to Dzongkha; that is, I have come across no East Bodish language contrasting a tonal contour or a high/low tonal contrast following obstruents in addition to a voicing contrast on the obstruent.

(12) H wá ‘tooth’
(13) L wàm ‘bear’

(14) H kó ‘door’
(15) L gòr ‘stone

[3] Further analyses for Dakpa may be found in Shafer (1954), van Driem (2007) and Hyslop & Tshering (to appear).
[4] The data presented here come from fieldwork on Dakpa in Arunachal Pradesh, India, adjacent to Bhutan’s northeastern border.
[5] A small sketch grammar of Bumthap also describes this system (van Driem 1995).

2.4 Other languages of Bhutan

With most of Bhutan's languages almost completely undescribed, our data for the remaining languages is sparse. Tshangla and Lepcha have been well-described in Andvik (1999) and Plaisier (2007) but there have been no phonological studies of Lhokpu or Gongduk and I have been unable to collect any data on either at this point. Thus, the discussion in this section is limited to the tonal systems of Tshangla and Lepcha.

Tshangla has been described to contrast high versus low tone following sonorant consonants for a small subset of words (Andvik 1999, 2003) with some dialects currently replacing a contrast in voicing of initial obstruents with a contrast of high/low tone on the following vowel. Despite the reported contrast following sonorants, it is virtually impossible to come across a minimal pair and none are reported in the literature. Lepcha is reported to be completely non-tonal.

Thus, Tshangla, spoken in the eastern extreme of Bhutan, and Lepcha, spoken in an isolated pocket of southwestern Bhutan, have the least tonal contrasts of the languages described for Bhutan in this article. Like East Bodish languages, Tshangla reports contrastive tone following sonorant consonants, but the number of words for which this contrast is reported is so small that no minimal pairs have been presented in the literature or have become available in my field notes. Andvik (pc) reports that the tonal dialects of Tshangla (i.e. those which are replacing a contrast of voicing on obstruents with one of tone on the following vowels, are those found northeast of Bhutan in adjacent areas of Tibet).

Of the tonal systems considered in this article, the Central Bodish language systems is the most complicated, with contrastive pitch (high/low) following sonorant consonants, an additional tonal/phonation contrast following voiced obstruents, and a contrast in contour available in any tonal register. The East Bodish languages have the next most complex system of tone, with contrastive tone on the first syllable of words following sonorant consonants and predictable tone following the obstruents (high follows voiceless obstruents and low follows voice). Minimal pairs evincing the contrast following the sonorants are readily found and tone is a robust feature of the language. Tshangla reports a tonal system like that found in the East Bodish languages but is much less robust; no minimal pairs have been found. Finally, Lepcha is reported to be atonal.

3 Diachronic developments

Through comparative research, primarily with written forms of Tibetan[6], the development of tone in Dzongkha (Central Bodish) and Kurtöp (East Bodish) can be inferred. Dzongkha, like Lhasa Tibetan and most Tibetan dialects, is considered to be a direct descendent of Classical Tibetan. The East Bodish languages are considered to be less closely related. It has been hypothesized that the parent language of East Bodish and Classical Tibetan would have been sister languages (e.g. Hyslop to appear a). This section begins with the development of tone in Dzongkha, largely based on Mazaudon and Michailovsky (1988), and then outlines the tonogenetic steps of Kurtöp, based on Hyslop (2009). It will be noted that Dzongkha and Kurtöp utilized some of the same potential triggers for tonogenesis, though Dzongkha did so more readily and in more environments than Kurtöp.

Tonogenesis in Asia, and more specifically in Tibeto-Burman, has been fairly well-documented. Matisoff (1970, 1999), Mazaudon (1977) and Evans (2001) represent just some of the previous research examining Tibeto-Burman tonogenesis. In summary, voiceless syllable initials have often yielded high tone while voiced syllable initials have yielded low tone. Glottalization and aspiration have also conditioned tonogenesis, as has the loss of syllable codas. Evans (2001) noted the role of areal influence in tonogenesis of a Tibeto-Burman language.

[6] Written Tibetan is commonly assumed to represent Classical Tibetan, as it was spoken in approximately 632 A.D. No tone is marked in the Tibetan writing system at the time, and it is thus assumed that Classical Tibetan was atonal.

3.1 Central Bodish tonogenesis

The steps envisioned here may not necessarily correlate with the chronological order of changes over time. Rather, the outline that follows is a theory that allows us to conceive of the process(es) that have led to the current synchronic state of Dzongkha phonology.

The first process involved the genesis of tone following sonorants. The first stage of this involved the simplification of complex onsets in which the second member was a sonorant. The first member of the onset cluster triggered high tone and the cluster simplified in favor of the sonorant. The preceding segment remains behind as glottalization preceding the sonorant. The data in (16-17) show Dzongkha pronunciation corresponding to their written Tibetan[7] cognates.

	Written Tibetan	Dzongkha	English
(16)	<rmarpo>	H ʔmá:p	'red'
(17)	<glud>	H ʔlý:	'dough.deity'

Syllable onsets which consisted only of a sonorant consonant, developed low tone on the following vowel without a change in the initial consonant. Examples of this are shown in (18-19) below.

	Written Tibetan	Dzongkha	English
(18)	<nga>	L ŋà	'1[st],[8]
(19)	<mar>	L mâ	'butter'

The second process described here involves tonogenesis following complex onsets in which the second member was an obstruent. When the second member of an onset cluster was a voiced initial, the onset simplified in favor of the second member, with a low tone on the following vowel and a fully pre-voiced initial. Some examples of this sound change are exemplified by the data in (20-21).

	Written Tibetan	Dzongkha	English
(20)	<rdo>	L dò	'stone'
(21)	<sga>	L gà	'saddle'

When the second member of the onset cluster was a voiceless consonant, the onset cluster simplified in favor of the second member and high tone phonologized on the following vowel. Data evincing this sound change are shown in (22-23) below.

	Written Tibetan	Dzongkha	English
(22)	<mtsho>	H ts^{h}ó	'lake'
(23)	<spa-tshar>	H páts^{h}a	'cane'

The third step envisioned is the triggering of high tone following simple voiceless onsets and low tone following simple voiced onsets. Data showing tone triggered by simple voiceless onsets are shown in (24) and (25).

	Written Tibetan	Dzongkha	English
(24)	<ta>	H tá	'horse'
(25)	<shar>	H çá:	'east'

Following simple voiced obstruent initials in Dzongkha, low tone and breathy voice has been triggered. In addition, the previously voiced segments are often realized as voiceless, suggesting that this tonogenetic step is still underway. That is, presumably this category of

[7] The data presented here are transliterated from the Tibetan 'Ucen orthography.
[8] The following abbreviations are used in this article: 1[ST] 'first person', ABS 'absolutive case'

obstruents – corresponding to simple voiced obstruents in classical Tibetan will eventually devoice completely and fully phonologize low tone on the vowels following the voiceless initials to be. Recall that Thurgood (2002) argues for an intermediate tonogenetic stage of breathy voice during this very process. Data showing the low tone, breathy voice, and devoicing of the initial are illustrated in (26-27).

	Written Tibetan	Dzongkha	English
(26)	<bum>	L bm̀ ~ pm̀	'daughter'
(27)	<gaci>	L gə̀ci ~ kə̀ci	'what'

With regard to the genesis of contours tones, Mazaudon and Michailovksy (1988) present evidence in favor of two different developments. Falling contours have developed in Dzongkha from the loss of a second syllable or from the loss of a coda /-r/ or /-l/. Other coda consonants which have been lost have triggered a level tone. Comparative evidence showing the conditioning of falling contour tones from second syllables is found in in (28-29) and evidence for coda /-r/ and /-l/ triggering falling tone[9] is shown in (30-31).

	Written Tibetan	Dzongkha	English
(28)	<zorba>	L zo̰u ~ so̰u	'sickle'
(27)	<blama>	H ʔlâm	'lama'
(29)	<dbyar>	L bzâ:	'summer'
(30)	<khal>	H khê:	'twenty'

In summary, this section has described at least four steps Dzongkha has taken in developing its current synchronic tonal system. The first step described involved sonorant initials. Complex onsets in which the second member was a sonorant simplified in favor of high tone on the following vowel, with the first consonant member deleting. These words also begin with a glottalization, perhaps a remnant of the previous consonant. Simple sonorant onsets triggered low tone on their following vowel without any changes to the initial consonant. In the second step, complex onsets in which both members consisted of obstruents simplified. If the second member of the cluster was a voiced obstruent, low tone was triggered on the following vowel and the first member of the cluster was dropped. These voiced initials are fully devoiced in the synchronic language. If the second member of the onset cluster was a voiceless obstruent, high tone was phonologized on the following vowel and the cluster simplified in favor of the second consonant. The third step consisted of simple voiced obstruent onsets triggering low tone and breathy voice on their following vowels; these initials are now in the process of devoicing. The fourth step described here is the development of contrastive contours. Second syllables and coda /-l/ and /-r/ in monosyllabic words which have been lost have conditioned a falling tonal contour. Other syllable types have a level tone. Both falling and level tones are present in the high and low tonal registers.

3.2 East Bodish tonogenesis

The tonogenetic properties of Kurtöp have been described in Hyslop (2009) via a combined experimental and comparative study. Below is a summary of those findings.

High tone was conditioned by complex onsets in which the first member was /s-/ and the second member was a sonorant. Any other sonorant onset – simple or complex with a different initial member – conditioned low tone on the following vowel. The data in (31-32) illustrate this. Note the /s-/ has conditioned high tone in (31) and (33), while a simple sonorant or /r-/ before a sonorant conditioned low tone in (34) and (32), respectively.

[9] Like in Lhasa Tibetan, the loss of coda /-l/ in Dzongkha has fronted the previous vowel.

	Written Tibetan	Kurtöp	English
(31)	<sna>	H ná	'nose'
(32)	<rna>	L nà	'ear'
(33)	<sngas>	H ŋá:	'drum'
(34)	<nga>	L ŋàt	'1st.ABS'

Kurtöp is still in the process of developing tone following the obstruent onsets. Voiceless onsets have triggered high tone on the following vowels while voiced onsets have conditioned low tone on their following vowels. The voiced initials are in the process of devoicing, with the voiceless palatal fricative having devoiced first. Examples of the correlations between voiceless initials and high tone on the one hand, and voiced initials and low tone on the other, are shown in (35-39). Note that (38) and (39) also show that regardless of whether the onset was simple or complex, low tone has been conditioned on the following vowel with optional devoicing present.

	Written Tibetan	Kurtöp	English
(35)	<sa>	H sá	'earth'
(36)	<kha>	H kʰá	'mouth'
(37)	<dkhrugs>	H ʈʰú	'stir'
(38)	<ba>	L bà ~ pà	'female.mithun'
(39)	<'ba>	L bà ~ pà	'target'[10]

As stated above, the voiced palatal fricative has fully devoiced. An example of the source for the low tone following the voiceless palatal fricative is found in a comparison with the neighboring language of Tshangla, shown in (40) below.

(40)	Tshangla	Kurtöp	English
	[ju]	L çòr	'alcohol'

Comparative research also suggests that the other East Bodish languages have developed tone via a similar pathway (i.e. complex onsets in which the first member is /s-/ and the second member is a sonorant conditioned high tone on the following vowel before the onset simplified in favor of the sonorant). Tone appears to be incipient following the obstruents in Dakpa, Dzala, Bumthap, Chali and Khengkha, though this observation remains the focus of ongoing research.

4. Summary and Conclusion

This article has compared the synchronic systems and diachronic trajectories of the tonal systems in some of Bhutan's Tibeto-Burman languages. The most complicated tonal system was found for Dzongkha, a Central Bodish language. Dzongkha contrasts high and low tone following sonorant consonants with the high tone also associated with glottalization. The high-toned sonorants were conditioned by previous complex onsets in which the second member was a sonorant and the first member any other consonant, which late deleted. Simple sonorant onsets conditioned low tone on their following vowel. The next step in Dzongkha tonogenesis was for complex onsets in which the second member was an obstruent to simplify in favor of the second obstruent. In the case that the second obstruent was voiced, low tone was triggered on the following vowel and in the case of a voiceless obstruent, high tone was conditioned on the following vowel. Simple obstruent onsets were also involved in tonogenesis; simple voiceless onsets triggered high tone while voiced onsets triggered low tone with breathy voice. The previously voiced onsets are now devoicing. The current synchronic situation following

[10] The initial orthographic apostrophe in written Tibetan has been the source of great debate amongst Tibetologists. Rather than go into the details here, let it suffice that it is generally assumed the apostrophe represented some sort of consonant.

Dzongkha obstruents is for tone to be high following the voiceless obstruents with a contrast (low tone with no devoicing of the initial obstruent vs. low tone with breathy voice and devoicing of the initial obstruent) following the voiced obstruents. Voiced obstruents which are prevoiced have low tone on the following vowel. A second set of voiced obstruents are often voiceless and have low tone and breathy voice on their following vowels. Finally, on top of the established high, low, and low/breathy tonal systems, Dzongkha also contrasts level and falling contours. The falling contours have been conditioned by the loss of a second syllable or the loss of coda /-r/ or /-l/ in monosyllabic words.

The East Bodish languages (Kurtöp, Bumthang, Khengkha, Chali, Dakpa and Dzala), though also tonal, report a tonal system less complicated than that of Dzongkha. Minimal pairs are readily found with high tone and low tone in contrast following sonorant initial syllables. Comparative data for Kurtöp show the high tone has come from complex onset clusters in which the first member was /s-/ and the second member was a sonorant. The clusters have since reduced in favor of the sonorant. Simple sonorant onsets conditioned low tone. Other complex onsets in Kurtöp have not triggered any tonal contrast. Following obstruents, tone is predictable, with high tone following the voiceless initials and low tone following the voiced initials. The voiced series of obstruents is currently in the process of devoicing. No contrast in terms of contour has been found in any East Bodish language.

The tonal developments for Tshangla and Lepcha remain undiscussed. In the case of the former, it is because there are so few lexical items for which a contrast is reported. Recall that in Tshangla, like Dzongkha and the East Bodish languages, high and low tone may contrast following sonorant syllable onsets. However, the contrast is so minimal in Tshangla that no comparative work has been done to trace its origins. Indeed, minimal pairs have not even been presented in the literature or found during my own fieldwork. Lepcha does not have tone at all.

A number of observations can be made from this comparison. First and foremost, the languages of Bhutan, despite being closely related (all Tibeto-Burman and all but one discussed here Bodic), developed tonal systems that differ in terms of their complexity. On one end of the spectrum we have Lepcha, a non-tonal language, and on the other end of the spectrum we have Dzongkha, for which at least four distinct tones can be described (high level, high falling, low level, low falling).

Second, the languages took similar pathways to acquire their current tonal systems. For all languages considered here, tone has developed first following the sonorant consonants. At least in Dzongkha and Kurtöp, this was conditioned by the presence of complex onsets. In Dzongkha any complex onset in which the second member was a sonorant conditioned high tone while in Kurtöp only a subset of these complex onsets conditioned high tone. Dzongkha has also innovated concomitant glottalization to accompany this high tone while in Kurtöp only high tone is present. Dzongkha, Kurtöp, and some dialects of Tshangla are in various stages of developing tone following simple obstruent clusters. Again, Dzongkha is somewhat more complex in this regard. Voiced onsets which were once the second member of an onset cluster have triggered low tone on their following vowel but are not currently devoicing. Voiced obstruents which were and are historically simple onsets have triggered low tone with concomitant breathy voice on their following vowels. These voiced segments are currently devoicing in Dzongkha. Importantly, despite the fact that Dzongkha and Kurtöp have followed similar tonogenetic pathways, the environments under which contrast developed were less in Kurtöp than in Dzongkha. And, Dzongkha has employed more suprasegmental features than either Kurtöp or Tshangla – both glottalization and breathy voice are salient features of tonal categories in Dzongkha, while they are not present in Kurtöp or Tshangla.

This study invites the following questions: ‘why would Dzongkha acquire more tonal contrasts than Kurtöp or Tshangla?’ and ‘why would more phonological contexts be sources of tonogenesis in Dzongkha than Kurtöp?’ and to extend the comparison, ‘why would Kurtöp give tone a greater functional load than Tshangla, or ‘why would Lepcha not have developed tone at all?’ This article cannot answer these questions, but I hope in asking these questions we can begin the next step, which is to seek answers. Perhaps more detailed examinations of the sound changes via comparative linguistics, experimental studies, and a more complete understanding of the

socio-historical picture that would have shaped Bhutan's languages will help us understand why Dzongkha is has the most robust tonal system but Lepcha is non-tonal. Future research on the tonal systems of languages of Bhutan promises to be an exciting endeavor.

References

Andvik, Erik. 2003. Tshangla. In *The Sino-Tibetan languages*, 439-455. London/New York: Routledge.

DeLancey, Scott. 2003. Lhasa Tibetan. In *The Sino-Tibetan languages*. London/New York: Routledge.

Driem, George van. 1995. *Een eerste grammaticale verkenning van het Bumthang, een taal van Midden-Bhutan : met een overzicht van de talen en volkeren van Bhutan*. Leiden: Research School CNWS.

———. 2001. *Languages of the Himalayas*. Vol. 1. 2 vols. Languages of the Himalayas: an ethnolinguistic handbook of the greater Himalayan region 1. Leiden/Boston/Köln: Brill.

———. 2007. Dakpa and Dzala form a related subgroup within East Bodish, and some related thoughts. In *Linguistics of the Himalayas and beyond*, 71-84. Berlin/New York: Mouton de Gruyter.

Evans, Jonathan. 2001. Contact-induced tonogenesis in Southern Qiang. *Language and Linguistics* 2, no. 2: 63-110.

Haudricourt, A. 1954. De l'origine des tons en Vietnamien. *Journal Asiatique* 242: 69-82.

Hombert, J.-M. 1978. Consonant types, vowel quality and tone. In *Tone: a linguisic survey*, 77-111. New York: Academic Press.

Hyslop, Gwendolyn. to appear a. Kurtöp and the classification of the languages of Bhutan. In *Proceedings from the 42nd meeting of the Chicago Linguistic Society*. Chicago: University of Chicago Press.

_____. To appear b. A grammar of Kurtöp. Eugene: University of Oregon PhD dissertation.

———. 2009. Kurtöp Tone: A tonogenetic case study. *Lingua* 119: 827-845. doi:10.1016/j.lingua.2007.11.012.

Hyslop, Gwendolyn, and Karma Tshering.2009. Preliminary notes on Dakpa (Tawang Monpa). In *North East Indian Linguistics 2*. Delhi: Foundation/Cambridge University Press, to appear.

Kingston, John. 2004. Mechanisms of tone reversal. In *Proceedings of the Third Symposium on Crosslinguistic Studies of Tone*, 57-120. Tokyo: Institute of the Study of the Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies,

Maspero, H. 1912. Études sur la phone´tique historique de la langue Annamite: les initiales. *Bulletin de l'Ecole Francaise d'Extreme Orient* 12: 1-126.

Matisoff, James. 1970. Glottal dissimilation and the Lahu high-rising tone: a tonogenetic study. *Journal of the American Oriental Society* 90, no. 1: 13-44.

———. 1973. Tonogenesis in Southeast Asia. In *Consonant types and tone*. Southern California occassional papers in linguistics. Los Angeles: Linguistics progran, University of Southern California.

———. 1999. Tibeto-Burman tonology in an areal context. In *Proceedings of the Symposium 'Cross-Linguistic Studies of Tonal Phenomena: Tonogenesis,*

Typology, and Related Topics, 3-32. Tokyo: Institute for the Study of Languages and Cultures of Asia and Africa, Tokyo University of Foreign Studies,
Mazaudon, Martine. 1977. Tibeto-Burman tonogenetics. *Linguistics of the Tibeto-Burman Area* 3, no. 2: 1-123.
Mazaudon, Martine, and Boyd Michailovsky. 1988. Lost Syllables and Tonal Contour in Dzongkha. In *Prosodic Analysis and Asian Linguistics: To Honour R.K. Sprigg.*, 115-136. Pacific Linguistics Series C 104. Canberra: Australia National University.
Plaisier, Heleen. 2007. *A grammar of Lepcha*. Leiden ;;Boston: Brill.
Shafer, Robert. 1954. The linguistic position of Dwags. *Oriens, Zeitschrift der Internationalen Gesellschraft für Orientforschung* 7: 348-356.
Thurgood, Graham. 2002. Vietnamese tonogenesis: revising the model and the analysis. *Diachronica* 19, no. 2: 333-363.
Watters, Stephen. 1996. A preliminary study of Prosody in Dzongkha. Arlington: University of Texas at Arlington.

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A syntactic analysis of Blackfoot *–attsi* causatives[*]

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Until very recently, Blackfoot *–attsi* causatives have only been studied through the lens of descriptive grammars (Frantz, 1991, Taylor, 1969, Uhlenbeck, 1938). In this paper, I provide a syntactic account of the distribution of *–attsi* causatives by placing them in Pylkkänen's (2008) typology of morphological causatives. Assuming that Voice introduces an external argument (Kratzer, 1996), I propose that Blackfoot *–attsi* is a *v*oice morpheme, which has the characteristics of *v* and Voice. I also propose that *-attsi* selects VoiceP complements. This proposal gives support to emerging evidence that Blackfoot valency-increasing "concrete final" morphemes, such as causative *–attsi* and benefactive *–omo*, are not significantly different from "abstract final" morphemes that introduce the external arguments of unergative and transitive verbs (Bliss, 2009, Ritter and Rosen, 2009). Both types of finals are derivational morphemes, and both types of finals are Voice.

1 Introduction: Blackfoot *–attsi* causatives

A causative construction is used to describe an event that is brought about by an external force, such as a person or a situation. Often, an argument is added to a causative construction that is interpreted as the causer of the event. Morphological causative verbs are derived by adding a causative morpheme to a verb. In this paper, I present a syntactic analysis of Blackfoot *–attsi* causatives. In Blackfoot *–attsi* causatives, the morpheme *–attsi* derives a transitive causative verb from an intransitive non-causative verb, as follows (1).

(1) BLACKFOOT –ATTSI CAUSATIVE

a. INTRANSITIVE VERB STEM
nítsspiyiwa
nit-ihpiyi-wa
1-dance-PROX
'I danced' (Frantz and Russell, 1995:22)

b. DERIVED TRANSITIVE CAUSATIVE VERB STEM

*nítsspiy**áttsaawa*	*nitána*
nit-ihpiyi-**attsi**-aa-wa	n-itan-wa
1-dance-**CAUSE**-DIR-PROX	1-daughter-3S

'I made my daughter dance' (Frantz, 1991:103, a)

[*] My deepest thanks to my Siksiká Blackfoot teachers, Rachel Ermineskin and Ikkinákahkomaahkaa (Noreen Breaker). Without their willingness to teach me this work would have been impossible. Many thanks to my supervisor, Elizabeth Ritter, for her guidance in preparing this work. All errors are mine. This paper is a shortened version of my Honours thesis (Johansson, 2009), which is available for download in its full form online: http://sites.google.com/site/sarajanejohansson/

While *–attsi* causatives have been considered in various descriptive grammars of Blackfoot (Frantz, 1991, Taylor, 1969, Uhlenbeck, 1938), this type of causative has not been theoretically dealt with in the literature until very recently.[1]

The typology of causatives that I adopt in this paper is one developed by Pylkkänen (2002, 2008), which explains variation in cause through two syntactic sources of variation. I briefly introduce her work below.

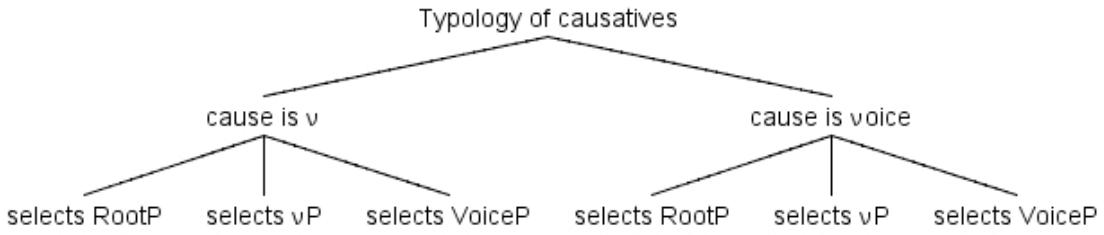
1.1 Pylkkänen's typology of causatives

Pylkkänen (2002, 2008) develops a typology of causatives to explain cross-linguistic variation in causative constructions. She proposes two sources of variation in causatives: the category of the cause head, and the category of the complement of cause, as in (2).

(2) SOURCES OF CAUSATIVE VARIATION
  1. CATEGORY OF THE CAUSE HEAD
    (i) Cause is *v*
    (ii) Cause is *v*oice[2] [3]
  2. CATEGORY OF THE COMPLEMENT OF CAUSE
    (i) RootP
    (ii) *v*P
    (iii) VoiceP

Following from these two sources of variation, Pylkkänen proposes that there are six types of causatives cross-linguistically. These are schematized below in (3).

(3) TYPOLOGY OF CAUSATIVES



The questions I set out to answer in this paper are: (i) what is the syntactic category of *–attsi*? and (ii) what is the category of the complement of *-attsi*? In other words, what is the syntactic structure of an *–attsi* causative? By applying Pylkkänen's diagnostics to Blackfoot

[1] Louie (2008) developed an analysis of *–attsi* causatives as I was writing this work. We have independently arrived at compatible proposals. She attempts to place *–attsi* causatives within a framework set out by Travis (2000), in which causatives are either lexical (single-event), or syntactic (bi-eventive). However, Louie shows that *–attsi* causatives are problematic for Travis' framework because they cut across both lexical and syntactic causative types. She proposes a third category, functor causatives, in order to account for *–attsi* causatives. To Louie, functor causatives are located in the head of an Event Phrase (EP) that takes a VoiceP complement. In this way, Louie explains why *–attsi* causatives are single-event causatives with properties of syntactic causatives. If *–attsi* was introduced *above* the EP, *-attsi* causatives would be bi-eventive. If *–attsi* was introduced *below* the EP, *-attsi* causatives would be lexical.

[2] Voice is a category that introduces external arguments, following Kratzer (1996).

[3] *v*oice is a convention I use to refer to a cause head with the properties of both *v* and Voice.

–attsi causatives, I give evidence that the cause head *–attsi* is *v*oice (always introduces an external argument), and selects a VoiceP complement.

1.2 Organization of this paper

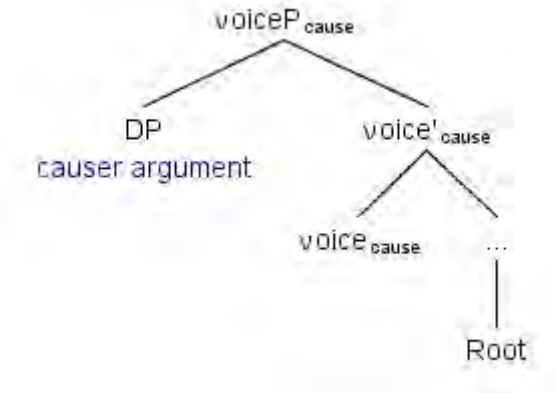
The rest of this paper is organized as follows. In §2 I argue that *–attsi* is *v*oice, and always introduces an external argument. In §3 I apply two diagnostics to *–attsi* causatives, and propose that *–attsi* selects a VoiceP complement. §4 is the conclusion of this paper.

2 The category of *–attsi* is *v*oice

Following Pylkkänen (2008), two types of cause heads occur cross-linguistically. In the first type, cause is "bundled" with the category Voice, and is realized as $v\text{oice}_{\text{cause}}$, a head that has properties of both *v* and Voice. In the second type, cause is not "bundled" with Voice, and is realized as the category v_{cause}.[4] I propose that the cause head *–attsi* is realized as $v\text{oice}_{\text{cause}}$.

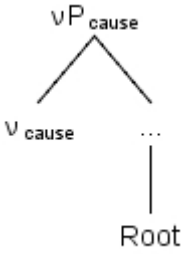
Following Kratzer (1996), I assume that Voice is the category that introduces external arguments. The characteristics of Voice have implications for the characteristics of cause cross-linguistically. If cause is realized as $v\text{oice}_{\text{cause}}$, the prediction is that cause will *always* introduce an external causer argument (4).

(4) $V\text{OICE}_{\text{CAUSE}}$ INTRODUCES CAUSER ARGUMENT



If cause is realized as v_{cause}, the prediction is that cause *need not* introduce an external causer argument. In some cases, v_{cause} projects a VoiceP, which introduces an external causer to the structure. However, v_{cause} does not obligatorily project a VoiceP. When cause is $v_{\text{cause,}}$ it is possible to construct sentences that have causative *semantics*, but no causer *argument* (5).

(5) V_{CAUSE} DOES NOT INTRODUCE CAUSER ARGUMENT



[4] Pylkkänen refers to these two variants as Voice-bundling and non-Voice-bundling, respectively. In this paper, I will refer to this variation as variation in the category of cause.

2.1 Evidence from Blackfoot

The evidence suggests that *–attsi* causatives must introduce a causer argument. Frantz (1991) contends that *–attsi* derives a transitive verb from an intransitive one; *-attsi* cannot add causative semantics without adding a causer argument. Louie (2008) proposes that *–attsi* functionally encodes a causer; that is, it always introduces an external causer argument. Finally, all of the *–attsi* sentences that I elicited involved the addition of a causer argument. However, it is possible to construct an *–attsi* causative sentence with a phonetically null causer argument (6).

(6) *–ATTSI* WITH PHONETICALLY NULL CAUSER

áíhpiyattsi	*ni*	*otsitapíím*
á-ihpiyi-attsi	ann-yi	ot-atapíím
IMPF-dance-CAUSE	DEM-OBV.SG	GEN-doll

'She is making her doll dance.'

Evidence that a phonetically null causer argument ('she') is present comes from the possibility of creating an imperative *–attsi* causative. If *–attsi* introduces a causer argument, it should be possible to create an imperative once *–attsi* is added to a verb. This is possible (7).

(7) IMPERATIVE *–ATTSI* CAUSATIVE

Ihpiyáttsisa!
ihpiyi-attsi-s-a
dance-CAUS-IMP-PRON
'Make her dance!'

Additionally, in an *–attsi* causative with a phonetically null causer, the causer can be questioned. This is additional evidence that the causer is present (8).

(8) CAUSER ARGUMENT CAN BE QUESTIONED

Áíhpiyattsi	*ni*	*otsitapíím.*
á-ihpiyi-attsi	ann-yi	ot-atapíím
IMPF-dance-CAUSE	DEM-OBV.SG	GEN-doll

Máátssksinowaawaatsiksi	*otáíhpiyattsiok.*
Maat-ssksino-aa-waatsiksi	ot-á-ihpiyi-attsi-ok
NEG-know.TA-DIR-NON.AFFIRM	3-DUR-dance-CAUSE-INV

'Someone is making that doll dance. I don't know who is making it dance.'

The fact that one can readily form an imperative from an *–attsi* causative and question a phonetically null causer argument is evidence in support of my proposal that *–attsi* always introduces an external argument, and is *v*oice$_{cause}$.

2.2 Summary

In this section I have shown that *–attsi* causatives readily form imperatives, and that the causer is readily questioned, even when phonetically null. I have developed a proposal that the category of *–attsi* is *v*oice$_{cause}$. This proposal is able to neatly capture the fact that *–attsi* causatives always introduce a causer argument.

In the following section, I turn to the second source of variation in causatives: variation in the complement of cause.

3 The complement of *–attsi* is a VoiceP

In §2 we established that the syntactic category of Blackfoot *-attsi* cause is the category *v*oice$_{cause}$. The purpose of this section is to determine the c-selectional properties of the Blackfoot causative morpheme *–attsi*. Following Pylkkänen (2008), I accomplish this by applying two diagnostics to *–attsi* causatives. Based on the evidence, I argue that Blackfoot *–attsi* causatives are of the Voice-selecting[5] type, and not root- or *v*-selecting.

C-selection is a term used to describe the process of selecting a complement of a particular syntactic category by a syntactic head. The options for a cause head are (i) rootP, which is a phrase containing a category-neutral root and no derivational morphology, (ii) *v*P, which is a phrase containing a category-neutral root and verbalizing morphology, but no external argument, and (iii) VoiceP[6], which is a phrase containing a category-neutral root, verbalizing morphology, and an external argument. In order to determine the category of the complement selected by the cause head, Pylkkänen develops two diagnostics: morphology between the root and the causative morpheme, and adverbial modification of the causing and caused events.

In the remainder of this section, I apply these diagnostics to Blackfoot. In §3.1 I give evidence that *–attsi* is not Root-selecting, but must be *v* or Voice-selecting. In §3.2 I give evidence that *–attsi* is Voice-selecting.

3.1 Diagnostic 1: Morphology between the Root and the Causative Morpheme

The first diagnostic assumes that any morphology between root and cause is part of the complement of cause; therefore, identifying the category of the morphology is tantamount to identifying the category of the complement. If cause is attached to a bare root, then the complement is a RootP. If cause is attached to a base consisting of a root and a verbalizing morpheme, then the complement is *v*P. If cause is attached to a base consisting of a root, a verbalizing morpheme and a Voice morpheme, the complement is VoiceP.[7] In this section, I use the morphology that intervenes between Blackfoot verb roots and *-attsi* to establish that Blackfoot *–attsi* causatives are not root-selecting, but must be either *v*- or Voice-selecting.

In a root-selecting causative, no morphology is permitted to intervene between root and cause. Such a causative is depicted below in (9).[8]

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[5] To Pylkkänen, these are phase-selecting causatives.

[6] Terminology here is ambiguous. Pylkkänen (2008) chooses to call the head that introduces an external argument Voice, following Kratzer (1996); Pylkkänen refers to the lexical verb as *v*. To Chomsky (1995), the head that introduces an external argument is *v*, and the lexical verb is V. This is summarized in the table below (i). In this paper, I adopt the terminology used by Pylkkänen.

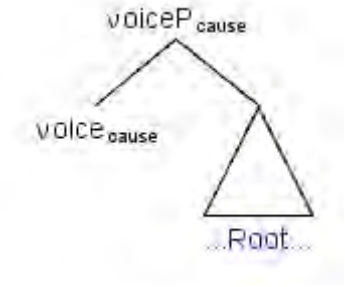
(i)

	INTRODUCES EXTERNAL ARGUMENT	LEXICAL VERB
Pylkkänen	Voice	*v* ⋮ Root
Chomsky	*v*	V

[7] Pylkkänen (2008) gives evidence that if high applicative morphology (McGinnis, 2001) intervenes between root and cause, the complement of cause is a VoiceP. A high applicative derives a ditransitive verb such as the English *John made Mary buy milk for the cat.* Blackfoot *–attsi* selects an intransitive verb stem to derive a transitive stem (Frantz, 1991). Additionally, there is evidence that Blackfoot verbs maximally encode two arguments (Bliss, 2005). For this reason, I do not pursue this diagnostic in this paper, but leave the possibility of ditransitive diagnostics to future research on other causative finals.

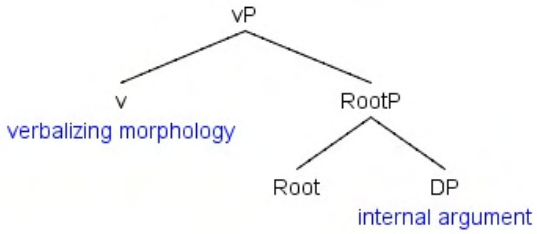
[8] Recall from §2 that the Blackfoot cause head is Voice-bundling, and is of the category *v*oice$_{cause}$. For this reason, in all trees representing Blackfoot or predictions pertaining to Blackfoot *–attsi* causatives the cause head is *v*oice$_{cause}$.

(9) ROOT-SELECTING CAUSATIVE



Root-selecting causatives take a category-neutral root as their complement. Category-neutral roots are here conceptualized, following Marantz (1997), as bound morphemes that contain the bulk of the lexical information of any given word. However, roots are not specified for any lexical category: once inserted into the syntax, they are verbalized[9] by a functional *v* head. This process is often, but not always, visible in the form of overt morphology. Internal arguments are assumed to be arguments of the root (Marantz, 1997). The structure of a root with an internal argument (an object) and verbalizing morphology is represented below in (10).

(10) CATEGORY-NEUTRAL ROOT WITH VERBALIZING MORPHOLOGY



3.1.1 Evidence from Blackfoot

If Blackfoot *–attsi* causatives are root-selecting, we predict that no morphology will intervene between the root and the causative morpheme. However, this is not the case. In this section, I show that Blackfoot *–attsi* causatives allow morphology to intervene between the root and the causative morpheme. Blackfoot *–attsi* causatives are therefore not root-selecting, but *v*- or Voice-selecting.

Before I can demonstrate that *–attsi* causatives do not appear adjacent to the root morpheme, I must first determine which morpheme is the root in a Blackfoot verb. To this end, it will be useful to give a brief introduction to Blackfoot verbs. Blackfoot verb stems[10] consist of two morphemes, which are called INITIAL and FINAL in traditional descriptions of Algonquian languages (Bloomfield, 1946).[11] Consider the following related intransitive verb stems meaning 'be black'. Both are composed of an initial meaning 'black' and a final indicating the animacy of the argument (11). These verb stems take inflectional suffixes to form different verbs (12).

[9] Functional *n* heads derive nominals from roots, and functional *a* heads derive adjectives; however, this paper only deals with roots in a verbal context.
[10] I elect to use the traditional term used in studies of Algonquian languages, which is STEM. A BASE is a technical term for a morphological constituent to which any affix is added. A stem is a technical term for a morphological base to which inflectional affixes are added. Causative affixes are considered derivational.
[11] There is an additional morpheme called a MEDIAL, which optionally intervenes between a root and a final.

(11) BLACKFOOT VERBS MEANING 'BE BLACK'[12]

a. *Sik(s)-inaa* ARGUMENT IS ANIMATE
black-AI.FINAL

b. *Sik(s)-inaattsi* ARGUMENT IS INANIMATE
black-II.FINAL

(12) VERB STEMS MEANING 'BE BLACK' + INFLECTION SUFFIXES

a. *Ann-wa* *poos-wa* *sik-(s)inaa-mm.*
DEM-AN.SG cat-AN.SG black-AI.FINAL-3S
'That cat (animate) is black (animate)'

b. *Ann-yi* *asoka'sim-yi* *sik-(s)inaattsi-wa.*
DEM-IN.SG dress-IN.SG black-II.FINAL-3S
'That dress (inanimate) is black (inanimate)'

Following Goddard (2002), I assume that the initial, the morpheme *sik* in the above examples, is the root morpheme. If *sik* is a root, it should appear in other word classes, which it does. In the following example, *sik* is part of the noun 'Blackfoot' (13).

(13) NOUN WITH INITIAL *SIK* 'BLACK'
Sik-siká
√black-foot
'Blackfoot'

The Blackfoot initial contains the bulk of the lexical information. The contribution of the final has to do with the selectional properties of the verb, and argument structure (Ritter and Rosen, 2009). As we saw in (11) and (12) above, there are often sets of related Blackfoot verb stems, which attribute a similar semantic roles to animate and inanimate arguments. Blackfoot intransitive verbs[13] often have two related stems: ANIMATE INTRANSITIVE, which selects an animate argument, as in (12)a; and INANIMATE INTRANSITIVE, which selects an inanimate argument, as in (12)b.[14]

To return to Pylkkänen's diagnostic, if *–attsi* causatives were root-selecting, we would expect the causative *–attsi* morpheme to appear directly after the initial (the root). However, this is not the case. Causative *–attsi* is to the right of the final, as schematized below (14).

(14) INTERNAL STRUCTURE OF A BLACKFOOT *–ATTSI* CAUSATIVE

INITIAL-	FINAL -	*ATTSI*
↑	↑	↑
Root	??	Cause

[12] In both of these examples the root-final consonant is *k*, which assibilates to *ks* before an *i*-initial morpheme in Blackfoot.

[13] This paper is only concerned with intransitive verbs, therefore transitive finals will be largely ignored.

[14] The arguments of animate intransitive verbs are normally *grammatically* animate, but as demonstrated in Johansson (2007), in exceptional circumstances the verb may select a *semantically* animate argument (that is grammatically inanimate).

Notice in (14) above that the category of the Blackfoot final morpheme is uncertain. In order to determine the c-selectional properties of *–attsi*, I will only be able to use the adverbial diagnostic. The c-selectional properties of *–attsi* will shed light on the category of the final.

Evidence that Blackfoot *–attsi* does not directly select a root can be found in descriptive grammars and dictionaries of Blackfoot (Frantz, 1991, Frantz and Russell, 1995, Taylor, 1969, Uhlenbeck, 1938). These sources note that *–attsi* is suffixed to a verb stem consisting of a root and a final, and not a bare root (15).

(15) a. ROOT *IHPI* 'DANCE'

AI:	*ihpi-yi*	√-AI.FINAL	'dance'
TI:	*ihpi-watoo*	√-TI.FINAL	'dance (a dance)'

(Frantz and Russell, 1995)

b. BLACKFOOT *–ATTSI* ATTACHES TO ROOT + FINAL

*nítsspiy**átts**aawa*	*nitána*
nit-ihpi-yi-**attsi**-aa-wa	n-itan-wa
1-√dance-AI.FINAL-CAUSE-DIR-PROX	1-daughter-3S
'I made my daughter dance'	(Frantz 1991:103, a)

These data support my hypothesis that *–attsi* is not a root-selecting causative. If *–attsi* selected a root directly, no final morpheme would intervene between the root and cause. However, (16)a shows that *–attsi* selects a root plus final, which suggests that the complement of *–attsi* is either *v* or Voice. Moreover, constructions in which *–attsi* intervenes between the root and the final are ungrammatical, as in (16)b. Therefore, I conclude that *-attsi* cannot select a RootP complement.

(16) a. CAUSATIVE *–ATTSI* IS SUFFIXED TO VERB STEM - GRAMMATICAL

na	*jaan*	*ooyattsaawa*	*ni*	*mary*
ann-wa	jaan	oo-yi-attsi-aa-wa	ann-yi	mary
DEM-PROX.SG	John	√eat-AI.FINAL-CAUSE-DIR-PROX	DEM-OBV.SG	Mary

'John fed Mary (cf. John made Mary eat)'

b. CAUSATIVE *–ATTSI* IS SUFFIXED TO ROOT – UNGRAMMATICAL

**na*	*jaan*	*ooattsiyaawa*	*ni*	*mary*
ann-wa	jaan	oo-attsi-yi-aa-wa	ann-yi	mary
DEM-PROX.SG	John	√eat-CAUSE-AI.FINAL-DIR-PROX	DEM-OBV.SG	Mary

'John fed Mary (cf. John made Mary eat)'

If *–attsi* is not Root-selecting, it must be either *v*- or Voice-selecting. To tease these apart, I turn to the adverbial modification diagnostic.

3.2 Diagnostic 2: Adverbial Modification

The second diagnostic considers adverbial modification of both the causing and caused events. The assumption behind this diagnostic is that different semantic classes of adverbs (manner, and agent-oriented adverbs) will only be able to modify certain elements in the structure; therefore, the availability of different semantic classes of adverbs in a causative construction tells us which heads are present and available for modification. Specifically, manner adverbs modify the action and are adjoined to *v*P, and thus provide indirect evidence for *v*.

Agent-oriented adverbs modify an argument of VoiceP, and thus provide evidence for Voice. These two sets of adverbs are summarized in the table below (17).

(17) TWO SETS OF ADVERBS

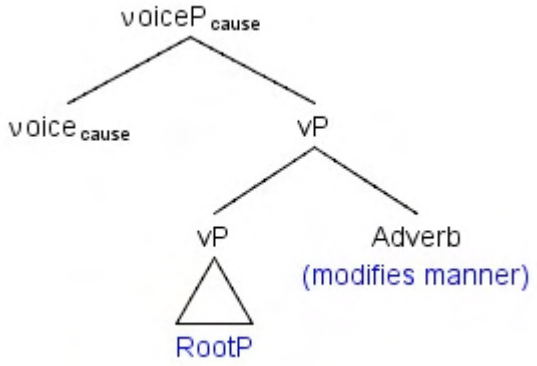
ADVERB SET	CATEGORY MODIFIED	SAMPLE ADVERBS (ENGLISH)	SEMANTIC CONTRIBUTION
Manner	*v*	*quickly* *quietly*	Modifies manner of action
Agent-oriented	Voice	*willingly* *obediently*	Modifies agent

The second diagnostic considers adverbial modification of and below the cause head. I use the scope ambiguity of agent-oriented and manner adverbs to demonstrate that Blackfoot *–attsi* causatives are Voice-selecting.

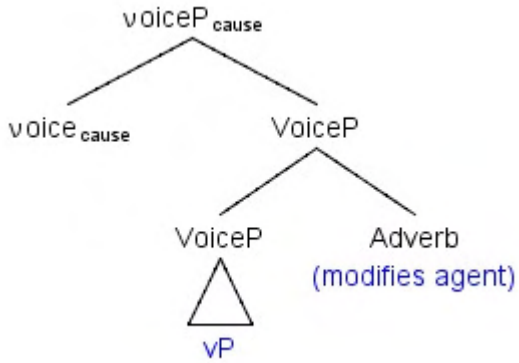
With this diagnostic, we are considering the c-selectional properties of *-attsi* heads to determine whether *–attsi* is *v*-selecting or Voice-selecting. Each complement (*v*P, or VoiceP) is predicted to allow different types of adverbs based on its content. These predictions are presented in (18).

(18) PREDICTED ADVERBIAL MODIFICATION OF *V*- AND VOICE-SELECTING CAUSATIVES

a. *V*-SELECTING



b. VOICE-SELECTING



3.2.1 Evidence from Blackfoot

In §3.1.1, we saw evidence that Blackfoot *-attsi* causatives are not root-selecting based on morphological evidence. In this section, I apply the adverbial diagnostic to *–attsi* causatives, and propose that Blackfoot *–attsi* is not *v*-selecting, but that it is Voice-selecting.

If *–attsi* is *v*-selecting, agent-oriented adverbs should not be able to take lower scope, because there is no Voice head below *v*voice$_{cause}$. If Blackfoot is Voice-selecting, both Voice and *v* are in the complement of *v*voice$_{cause}$, so agent-oriented adverbs should be able to take lower scope and modify the caused event (19).

(19) SCOPE AMBIGUITY PREDICTIONS: *V*- AND VOICE-SELECTING CAUSE

	v-selecting	Voice-selecting
Agent-oriented adverb modifies causing event	✓	✓
Agent-oriented adverb modifies caused event	×	✓

Blackfoot *–attsi* causatives pattern with Voice-selecting causatives. The following example shows that agent-oriented adverbs can take either higher scope and modify the causing event, or it can take lower scope and modify the caused event. This scope ambiguity is what is predicted for Voice-selecting causatives (20).

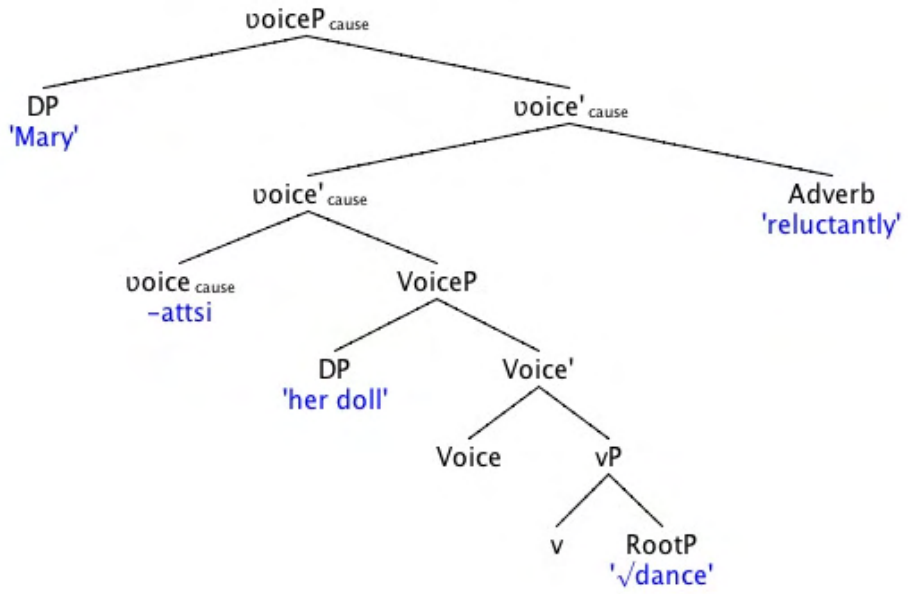
(20) AGENT-ORIENTED ADVERB OPTIONALLY MODIFIES CAUSED EVENT

anna	*Mary*	*áísstsimáíhpiyiattsi*	*ni*	*otsitapíím*
ann-wa	Mary	á-sstsim-ihpiyi-attsi	ann-yi	ot-atapíím
DEM-PROX.SG	Mary	IMPF-reluctant-dance-CAUS	DEM-OBV.SG	GEN-doll

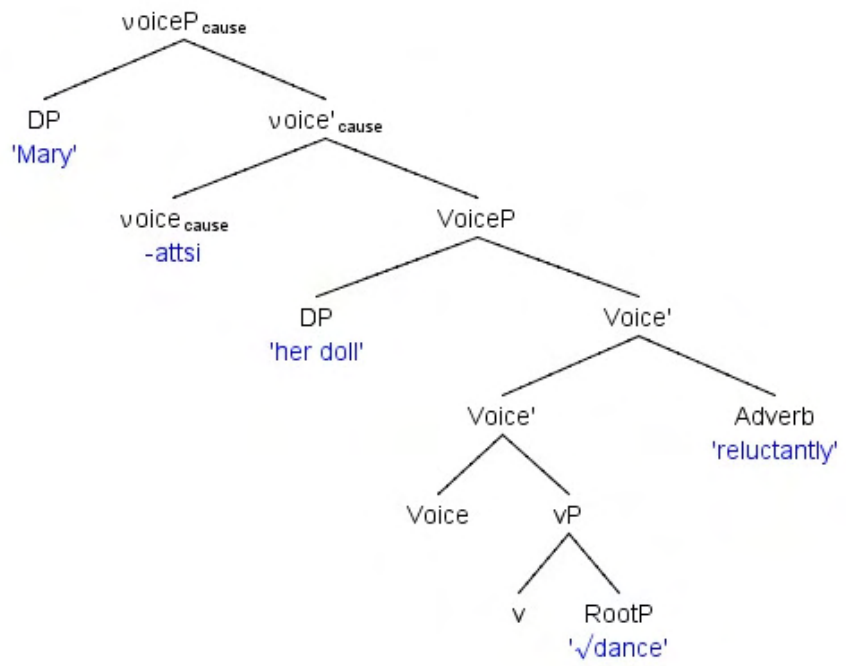
(i) 'Mary, reluctantly, made the doll dance.'
Context: *Mary has been asked to demonstrate that her doll can dance but she doesn't want to.*

(ii) 'Mary made the doll, reluctantly, dance.'
Context: *In play, Mary is asking her doll, who she views as an animate being, to dance. Her doll doesn't want to dance, but Mary begs the doll until finally the doll consents to dance, albeit reluctantly.*

(i)

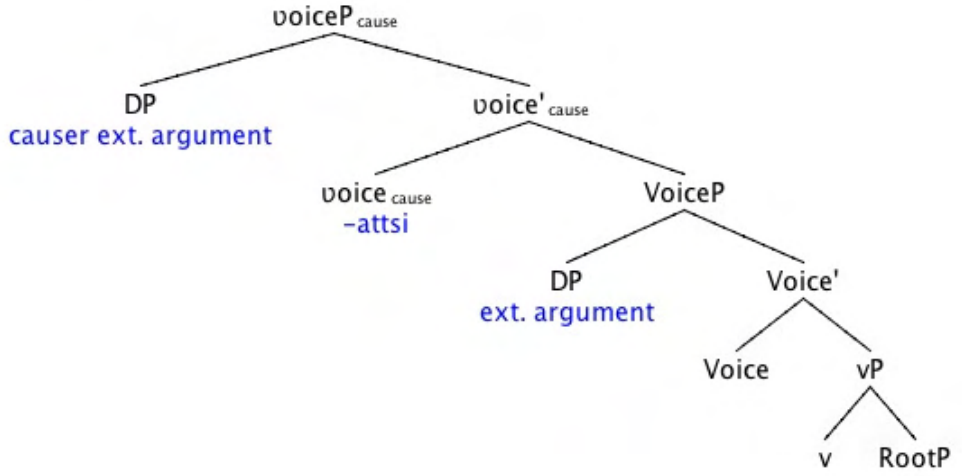


(ii)



Because the agent-oriented adverb *reluctantly* is able to modify a head below cause, I claim that Blackfoot *–attsi* causatives are Voice-selecting; that is, Blackfoot *–attsi* takes a VoiceP as a complement. The structure of an *–attsi* causative is schematized in (21).

(21) PROPOSED STRUCTURE OF BLACKFOOT *–ATTSI* CAUSATIVES



In the above structure, the Voice and *v* heads are left empty. This is because the category of the final is uncertain, as mentioned above. The Blackfoot verb final could be in either *v* or Voice, while the other head is null (22).

(22) VOICE-SELECTING CAUSATIVE: CATEGORY OF FINAL UNCERTAIN

	ROOT	-	*V*	-	VOICE	-	CAUSE
(i)	Initial	-	Final	-	ø	-	*attsi*
(ii)	Initial	-	ø	-	Final	-	*attsi*

3.3 Summary

Over the course of the past two sections I have given evidence that Blackfoot *-attsi* causatives select a causer external argument, and that *–attsi* causatives allow Voice-modifying agent-oriented adverbs below cause. This constitutes evidence that the Blackfoot causative morpheme *–attsi* is a *v*oice$_{cause}$ head, and that it selects a VoiceP as a complement. I conclude this paper in the following section.

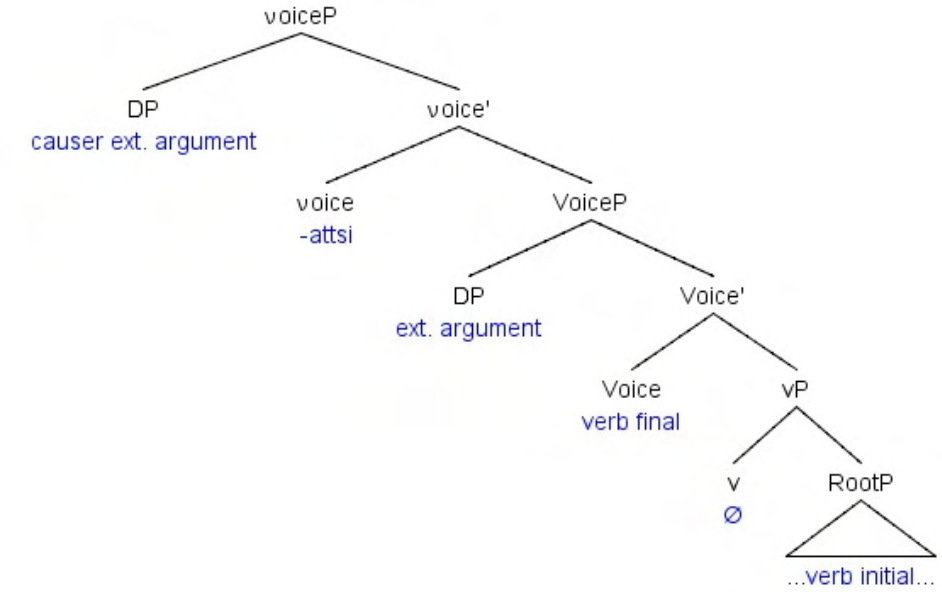
4 Conclusion

In this paper I have presented a syntactic analysis of Blackfoot *–attsi* causatives. I have given evidence that *–attsi* is *v*oice$_{cause}$, a category that shares properties of *v* and Voice, and always introduces an external causer. I have proposed that the complement of *–attsi* is a VoiceP. In support of this proposal, I demonstrated that agent-oriented adverbs can ambiguously modify the causing or the caused event, which I assume is only possible when there is a Voice head in the complement of *v*oice$_{cause}$/*v*$_{cause}$.

4.1 The Question of Blackfoot Verb Finals

My proposal that the Blackfoot causative morpheme *–attsi* is Voice-selecting does not provide independent evidence about the syntactic category of Blackfoot verb finals. However, Ritter and Rosen (2009) present convincing evidence that Blackfoot verb finals introduce external arguments; in other words, that Blackfoot verb finals are Voice morphemes. Assuming their analysis, I propose the following revised structure for Blackfoot *–attsi* causatives (23).

(23) REVISED: PROPOSED STRUCTURE FOR BLACKFOOT *–ATTSI* CAUSATIVES



4.2 Implications/For Future Study

In this paper, I have presented the proposal that the causative morpheme *–attsi* is *v*oice$_{cause}$, and introduces external arguments. Blackfoot *–attsi* is classed as a CONCRETE FINAL (Frantz, 1991), which is a term used in studies of Algonquian languages for derivational valence-changing morphemes (Bloomfield, 1946). Frantz (1991) classes causative *–attsi* with other

concrete finals such as the benefactive morpheme *–omo*, the reflexive morpheme *-ohsi*, and the reciprocal morpheme *–otsiiyi.* Concrete finals are contrasted with Blackfoot verb finals (ABSTRACT FINALS) (24).

(24) SOME CONCRETE FINALS

FINAL	FUNCTION	VALENCE-CHANGE	EXAMPLES	CATEGORY
-attsi	Causative	+1	'I danced'	Voice
			'I made **Mary** dance'	
-omo	Benefactive	+1	'I bought milk'	Voice (Bliss, 2009)
			'I bought milk **for her**'	
-ohsi	Reflexive	-1	'John shaved Bill'	??
			'John shaved (**himself**)'	
-otsiiyi	Reciprocal	-1	'I love you'	??
			'**We** love (each other)'	

Ritter and Rosen (2009) class the benefactive morpheme *–omo* with abstract finals, instead of with concrete finals. Recall that they propose that abstract finals are Voice: their treatment of benefactive *–omo* is consistent with my treatment of causative *–attsi*, except that Ritter and Rosen do not distinguish between Voice and *v*oice, as is done in this analysis. Bliss (2009) also gives evidence that the benefactive morpheme *–omo* is Voice, and does not address the Voice/*v*oice distinction. In her work, Bliss develops a proposal that the distinction between abstract and concrete finals is less important than a distinction between finals that introduce inanimate arguments and finals that introduce animate arguments.

Bliss assumes Ritter and Rosen's (2009) analysis that the category of Blackfoot verb finals is Voice. She presents evidence that transitive animate verb finals, which are abstract finals that introduce an animate internal argument and an animate external argument, have the same properties as the concrete final *–omo*. She hypothesizes that there may be no need to distinguish between abstract and concrete finals in Blackfoot. As this distinction is made across the entire Algonquian language family, there may be no need for a distinction between abstract and concrete finals in other languages, either. Consider the following similarities between abstract and concrete finals (25).

(25) ABSTRACT VS. CONCRETE FINALS IN BLACKFOOT

CLASS OF FINAL	TYPE OF MORPHOLOGY	CATEGORY
Abstract	Derivational	Voice
Concrete	Derivational	Voice/*v*oice

(Bliss, 2009, Frantz, 1991, Johansson, 2007, Ritter and Rosen, 2009)

The first task in continuing this work will be to determine whether or not all of the concrete finals listed by Frantz (1991) have the properties of Voice/*v*oice. Regarding the abstract/concrete final problem, at present, only valency-increasing concrete finals have been studied in depth. It remains to be determined whether valence-decreasing concrete finals (reflexives and reciprocals) can be treated with the same analysis. It also remains to be determined whether the classification of verb finals into concrete and abstract holds in any Algonquian language. This is interesting work that I leave to future research.

References

Bliss, Heather. 2005. Formalizing Point-of-View: The Role of Sentience in Blackfoot's Direct/Inverse System, MA Thesis, Department of Linguistics, University of Calgary.

Bliss, Heather. 2009. Argument Structure, Animacy and Applicatives in Blackfoot. Paper presented at *WSCLA 14*, Purdue University.

Bloomfield, Leonard. 1946. Algonquian. In *Linguistic Structures of Native America, Viking Fund Publications in Anthropology 6*, ed. Harry Hoijer, 85-129. New York: Viking Fund.

Chomsky, Noam. 1995. *The minimalist program*. Cambridge, Mass.: The MIT Press.

Frantz, Donald. 1991. *Blackfoot grammar*. Toronto ; Buffalo ;: University of Toronto Press.

Frantz, Donald, and Russell, Norma. 1995. *Blackfoot dictionary of stems, roots and affixes*. Toronto ; Buffalo: University of Toronto Press.

Goddard, Ives. 2002. Primary and Secondary Stem Derivation in Algonquian. *International Journal of American Linguistics* 56:449-483.

Johansson, Sara. 2007. Sentient and Stem Agreement in Blackfoot. In *Papers of the 39th Algonquian Conference*, eds. Regna Darnell and Karl S. Hele. London: University of Ontario.

Johansson, Sara. 2009. A Syntactic Analysis of Blackfoot *-attsi* Causatives, Department of Linguistics, University of Calgary.

Kratzer, Angelika. 1996. Severing the External Argument from its Verb. In *Phrase Structure and the Lexicon*, eds. J. Rooryk and L. Zarings. Dordrecht: Kluwer Academic Publishers.

Louie, Meagan. 2008. Two Single-Event Causatives in Blackfoot: Unpublished term paper, University of British Columbia.

Marantz, Alec. 1997. No escape from syntax: don't try morphological analysis in the privacy of your own lexicon. In *University of Pennsylvania Working Papers in Linguistics*, eds. A. Dimitraidis, L. Siegel and et. al., 201-225.

Pylkkänen, Liina. 2002. Introducing Arguments, PhD Dissertation, MIT.

Pylkkänen, Liina. 2008. *Introducing arguments*: Linguistic inquiry monographs ;. Cambridge, Mass.: MIT Press.

Ritter, Elizabeth, and Rosen, Sara Thomas. 2009. Animacy in Blackfoot: Implications for Event Structure and Clause Structure. In *Syntax, Lexical Semantics and Event Structure*, eds. E. Doron, I. Sichel and M. Rappaport-Hovav. Oxford: Oxford University Press [in press].

Taylor, Allan Ross. 1969. A Grammar of Blackfoot, Department of Linguistics, University of California, Berkeley.

Travis, Lisa deMena. 2000. Event Structure in Syntax. In *Events as grammatical objects : the converging perspectives of lexical semantics and syntax*, eds. Carol L. Tenny and James Pustejovsky. Stanford: CSLI Publications, Center for the Study of Language and Information.

Uhlenbeck, C. C. 1938. *A Concise Blackfoot grammar : based on material from the southern Peigans*: Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Letterkunde. New York AMS Press, 1978.

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Introducing non-agentive causees*

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Contrary to the previous observation that a causee is agentive, this paper argues that some causees are not agentive. A central proposal is that non-agentive causees are introduced by a high applicative head (Appl). The applicative proposal is supported by evidence from binding and the adverb modification of 'on purpose'. This evidence further indicates that agentive external argument introducer, v_{DO}P or VoiceP is not appropriate for non-agentive causees. More support for the applicative account comes from morphological evidence in which a high applicative is employed in causatives as a tool to extend the argument structure of a causative verb or is marked by the same morpheme that marks causatives. Thus, the applicative account provides evidence for expanding Pylkkänen's typology on complement selection by adding an applicative-selection. It is also argued that the result of this expanding provides evidence in favor of distinguishing the semantics of Appl from that of Voice: non-agentive Appl vs. agentive Voice.

1 Introduction

A causee in traditional approaches is considered a logical subject of the base predicate (Cole 1983; Alsina 1992; Guasti 1996).[1] For instance, in the Italian causative (1), a causee, 'Mario' is the logical subject of the predicate 'repairing the car.'

(1) Gianni ha fatto riparare la macchina a Mario
Gianni has made repair the car to Mario
'Gianni got Mario to repair the car.'

More recently, it has been observed that a causee in a type of causative like in (1) is an intentional agent (Folli and Harley 2006; Pylkkanen 2008). As such, it is introduced by v_{DO} or Voice. However, it is not always the case that a causee is agentive, as shown in the following Korean example (2). The causee 'Inho' cannot be modified by an agent-oriented adverb *ilpwule* 'on purpose', unlike the causer 'Swuni.' That is, it is not an agent in Korean (Kim 2008).

(2) Swuni-ka Inho-eykey chayk-lul ilpwule ilk-hi-ess-ta
Swuni-NOM Inho-DAT book-ACC on purpose read-CAUSE-PAST-DEC
'Swuni on purpose made Inho read the book.' (Swuni's intention only, not Inho's intention)

As will be shown later in the paper, causees in English, Niuean (a Polynesian language of the Tongic subgroup), and Kinyarwanda show a similar pattern to the Korean one in terms of agentivity. The previous approaches discussed earlier cannot extend to the non-agentive causee as in (2). Two important questions arise: (i) what head does introduce a non-agentive causee?, and (ii) how is the head that introduces the causee different from v_{DO} or Voice?

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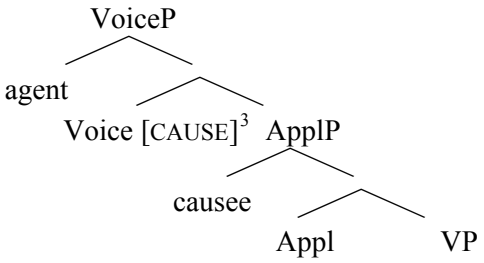
[1] The focus of the discussion in this paper is on a non-periphrastic causative only (see Song 1996, 2005 for classification).

In this paper, I address these questions, and argue that non-agentive causees are introduced by a high applicative head (Appl) (3), which shares a similar insight with Kim (2008)'s proposal on Korean non-periphrastic causatives.[2]

(3)



Important consequences of the proposed account is that (3) provides evidence for expanding Pylkkänen's typology (2002, 2008) on complement selection by adding *applicative-selection*. That is, the causatives like in (3) select ApplP as a complement. It is also argued that applicative-selecting causatives constitute evidence for distinguishing Appl and Voice *semantically*: Appl introduces a non-agentive external argument contrary to Voice.

This paper is organized as follows. In section 2, I introduce assumptions about Voice and Appl. In section 3, I present previous analyses in which the causee is an agent, and thus it is introduced by v_{DO} or VoiceP. In section 4, I demonstrate why an agent introducing head v_{DO} or Voice fails to capture the properties of some causees in the languages under the investigation. I argue that those non-agentive causees are introduced by Appl, based on their syntactic and semantic properties. In section 5, I discuss the consequences of the applicative account. In section 6, I conclude the paper by summarizing its key contributions.

2 Assumptions: Voice and Appl

This paper assumes that the Voice head introduces external arguments (Kratzer 1996). In particular, the argument introduced by Voice exhibits intensionality (i.e. deliberateness). Voice relates the external argument to the event described by the verb, and combines with the VP via a semantic rule called Event Identification. In this manner, Voice introduces an external argument as a participant to the event.

The syntax and semantics of high applicatives (Pylkkänen 2002, 2008) is of particular interest to the proposed analysis.[4] Building on the previous studies on Bantu applicatives (Baker 1988; Bresnan and Moshi 1993; Marantz 1993), Pylkkänen proposed that high applicative head introduces an applied DP in a position external to VP, in a parallel manner to Voice introducing the external argument in its specifier position. Semantically, Appl adds a participant to the event by the rule of Event Identification, as Voice

[2] Both W. Lee (2003) and Kiguchi (2006) proposed that the complement to a *periphrastic causative* in Korean involves a high applicative. In addition, W. Lee proposed that *a non-periphrastic causative* in Korean involves a high applicative as well. Importantly, however, the current paper provides different evidence for a high applicative complement to a non-periphrastic causative: adverb modification, binding, and syntax/semantics of the complement as in Pylkkänen (2002). In Kiguchi, the evidence is based on the A-movement pattern (McGinnis 2001) of periphrastic causatives. In W. Lee, on the other hand, the evidence is dative case marking on the causee. More importantly, unlike the current paper, in both proposals, there is no discussion on the implications for the various complement selection of causatives with respect to Pylkkänen (2002). It should be mentioned that for Japanese causative Kiguchi proposed a *low* applicative analysis, which is also different from the current *high* applicative analysis.

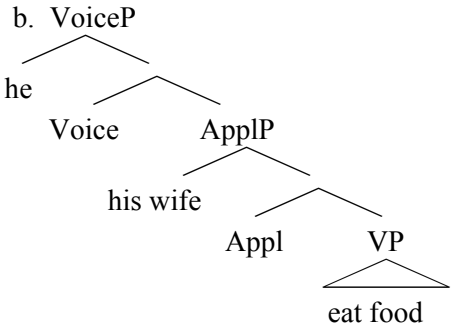
[3] I assume that causatives are bi-eventive (Parsons 1990; Pylkkänen 2002, 2008; Cuervo 2003). For example, Pylkkänen (2008) argues that causatives are bi-eventive structures in which the predicate CAUSE introduces an implicit event argument, a causing event, to the VP describing a caused event. For the purpose of this paper, I assume, for the causatives under the discussion, Voice bundling approach in which CAUSE and the external thematic relation comprise one syntactic head, Voice.

[4] Pylkkänen proposed another type of applicative, low applicative. Unlike high applicative, it relates the DP in its specifier to an individual (i.e., a DP).

does. In (4b), for instance, Appl introduces a benefactive argument, 'his wife' to the event VP 'eating food'. Given the semantics of a high applicative, a static verb like 'hold' is proposed to be able to be embedded under high applicatives (but not low applicatives). As the verb does not denote a transfer relation between two DPs, it is compatible with a high applicative only (but not with a low applicative). This test will be used later to determine a category of the complements to causatives.

(4) a. N-½a-½ý-lyì-í-à m- kà k-élyá Chaga
FOC-1SG-PRES-eat-APPL-FV 1-wife 7-food
'He is eating food for his wife.'

b.



As illustrated in (4b), an applied argument asymmetrically c-commands a direct object, which is a well-known asymmetry in applicatives across languages (Barrs and Lasnik 1986; Marantz 1993). Relevant to this asymmetry is a scope property in which the applied argument scopes over the theme argument but no inverse scope is allowed (e.g., Marantz 1993).

3 Previous analyses: v_{DO} or Voice as introducing causees

Traditionally a causee is viewed as a logical subject of the base predicate (Rizzi 1986; Mohanan 1988; Alsina 1992; Guasti 1996). In particular, recent studies on causatives argue that a causee is an agent and thus it is licensed by v_{DO} (Folli and Harley 2007) or Voice (Pylkkänen 2002, 2008).

Japanese and Italian causatives, for instance, are argued to select an embedded clause headed by a v_{DO} (Harley 2006 for Japanese, Folli and Harley 2007 for Italian).[5] Causees in those languages are argued to merge in the specifier of v_{DO} that requires its argument to be an agent. In the unmarked case, the agent is animate and intentional (Folli and Harley 2005, 2008). Crucial evidence for the claim is the fact that in both Italian and Japanese causatives the dative causee is limited to animates only. If an inanimate causee appears, the causative is ungrammatical, as exemplified with the following Italian causative:

(5) Gianni ha fatto rompere la finestra a Maria / *al ramo.
Gianni has made break the window to Maria / to the branch
'Gianni made Maria / *the branch break the window.' (Folli and Harley 2007)

Thus, the crucial role of v_{DO} is to restrict its specifier position to animate agents. Under this view, the binding facts in both languages can be explained. The causee in both Japanese and Italian causatives can bind a reflexive pronoun in the object position. This is exemplified with a Japanese example in (6):

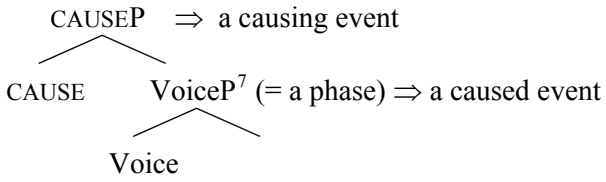
(6) Tanaka$_1$-ga Suzuki$_2$-ni zibun$_{1/2}$-no hon-o yom-ase-ta
Tanaka-NOM Suzuki-DAT self-GEN book-ACC read-CAUSE-PAST
'Tanaka$_1$ made Suzuki$_2$ read his$_{1/2}$ book.' (Kuroda 1965)

[5]Likewise, Son (2006) proposed that v_{DO} licenses a causee in Korean causatives where a base verb is a 'put on' type (Son 2006) (cf. (11)), without considering the binding and an agent oriented adverb modification fact discussed below.

In (6), the subject oriented reflexive pronoun *zibun* 'self' can be bound by the dative argument, which suggests that the causee is a semantic subject (i.e., an agent).[6] The proposal that v_{DO} can take only an animate agent thus can account for the binding facts.

A similar proposal on causatives is found in Pylkkänen (2002, 2008) in which Voice introduces a causee, as illustrated below:

(7) Phase selecting causative



CAUSE in (7) introduces a causing event to its complement. Importantly, its complement is VoiceP. As CAUSE in (7) selects VoiceP complement that introduces an external argument, it is called a phase-selecting causative.[8] Like v_{DO} that introduces an intentional agentive causee, Voice serves a similar function. For example, the causative in Luganda (8) is argued to be a phase-selecting causative. In (8), the causee, 'Katonga' is introduced by Voice, as it can be modified by an agent-oriented adverb.

(8)	Omusomesa	ya-wandi-s-a	Katonga	ne obu nyikivu	Luganda
	teacher	3SG.PAST-write-CAUSE-FV	Katonga	with the dedication	

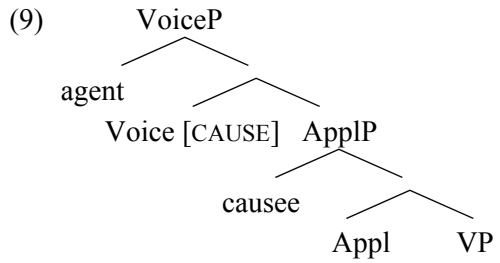
'The teacher made [Katonga write with dedication].'

In short, in the previous studies on causatives, a causee is viewed as an intentional agent. As such, it is introduced by v_{DO} or Voice.

4 New account: Appl as introducing a causee

I argue that in some languages an agent licensing head is inappropriate for causees, in contrast to the traditional views. That is, v_{DO} (Folli and Harley 2007) or Voice (Pylkkänen 2008) fails to introduce a causee in those languages. Instead, I argue that Appl introduces a causee, as represented in (9):

(9)



[6] The fact shown in (6) suggests that the dative causee is a structural subject as well (Miyagawa 1999; Harley 1995, 2006).

[7] Pylkkänen (2002, 2008) does not detail a phase phrase; however, it is clear from her argument and examples, the relevant phase phrase is VoiceP.

[8] The term 'phase' in Pylkkänen (2002) should *not* be equally treated in all respects as the 'phase' in McGinnis (2001, 2002, 2004). Pylkkänen adopted the term from McGinnis in the sense that it can introduce an external argument. Thus, McGinnis's proposal in which high applicative is a phase in terms of A-movement does not necessarily imply that Pylkkänen's phase should include a high applicative. In fact, the complements to causatives in Korean discussed here do not show A-movement pattern as predicted by McGinnis (Kim 2008), suggesting that the complements do not pattern with a phase. Lastly, the phase defined as in Pylkkänen can be modified by an agent oriented adverb, but high applicatives cannot. Thus, an applicative-selecting causative under the current proposal is distinct from a phase-selecting causative in Pylkkänen.

In the subsequent sections to follow, I demonstrate that ApplP is a complement to the causatives where a causee is non-agentive.

4.1 Some causees are not agents

According to the view in which a causee is licensed by v_{DO} or Voice, the causee is an intentional agent as well as animate. However, this view cannot account for the data where a causee is neither intentional (10) nor animate (11):[9]

(10) a. Swuni-ka Minswu-eykey chayk-lul ilpwule ilk-hi-ess-ta Korean
Swuni-NOM Minswu-DAT book-ACC on purpose read-CAUSE-PAST-DEC
'Swuni *on purpose made* Minswu read the book.' (Swuni's intention only).

b. John$_1$ had Mary$_2$ pick up a book deliberately$_{1/*2}$. (Givon 1975) English

c. Kua fakaetoeto pauaki a ia he fekau Niuean
PERF CAUSE-slow deliberately ABS.P 3.SG LOC.C errand
'He *deliberately caused* himself to be slow in going an errand.'
*'He caused himself to be *deliberately slow* in going an errand.' (Massam et al. to appear)

(11) Swuni-ka inhyung-ey os-ul ip-hi-ess-ta Korean
Suni-NOM doll-DAT clothes-ACC wear-CAUSE-PAST-DEC
Lit. 'Swuni made the doll put on the clothes.' (Suni dressed the doll).

As demonstrated in (10), an agent-oriented adverb cannot modify a caused event where the causee is the subject, although the adverb modifies the causing event where the causer is the subject. The incompatibility of the causee with the adverb indicates that the causatives are neither phase- nor v_{DO}-selecting causatives, as their complements are not modified by adverbs such as 'on purpose' (cf. section 3).

Non-agentivity of the causee in non-periphrastic causatives (10) and (11) can be highlighted by comparing it to a causee in a periphrastic causative (12). Consider the following Korean periphrastic causative marked with *-key ha*:[10]

(12) a. Swuni-ka Minswu-eykey chayk-ul ilpwule ilk-**key ha**-ess-ta
Swuni-NOM Minswu-DAT book-ACC on purpose read-CAUSE-PAST-DEC
'Swuni$_1$ made Minswu$_2$ read the book on purpose$_{1/2}$.'

b. *Swuni-ka inhyung-ey os-ul ip-**key ha**-ess-ta
Swuni-NOM doll-DAT clothes-ACC wear-CAUSE-PAST-DEC
'Swuni made the doll put on the clothes.'

In contrast to the causee in the Korean non-periphrastic causative (10a), the causee in the periphrastic one (12a) is compatible with the agent-oriented adverb. The periphrastic causative does not allow an inanimate causee either (12b), unlike the non-periphrastic causative (11).

Support for non-agentive causees is also found in traditional literature (Givon 1975, 1976; Talmy 1976; van Villan et al. 1996). By examining causatives in English and Bantu, for instance, Givon (1976) observed that causees in English *have* causatives are neither agentive nor deliberate. Formally, it was

[9]Korean non-periphrastic causatives are marked with a voice morpheme *-i* which surfaces variously as *-hi, -li,* and *-ki*, depending on phonological environments (H. Lee 1985; S. Lee 1986; Yeon 1991; Kang 1997).
[10]As mentioned in footnote 2, Kiguchi (2006) proposes that the complement to a Korean *periphrastic* causative involves a high applicative. However, the fact that a causee in periphrastic causative (12) is compatible with an agent oriented adverb may suggest that the complement to the periphrastic causative may involve Voice rather than a high applicative.

argued that causative verbs allow only one controller per causation chain, and thus only a causer has deliberateness but a causee does not. That is, a causee is not an agent whereas a causer is an agent, as is also true with those causatives in (10).

v_{DO} or Voice cannot also be the complement to the causatives in (10) and (11), due to the binding facts. For instance, Korean has a reflexive pronoun *caki* 'self' that requires a semantic subject antecedent (Shibatani 1973), as the following periphrastic causative illustrates:

(13) kimssi$_1$-nun ku sonye$_2$-eykey caki$_{1/2}$-uy chayk-lul il-key ha-ess-ta
Kim-TOPIC the girl-DAT self-GEN book-ACC read-CAUSE-PAST-DEC
'Mr Kim$_1$ made the girl$_2$ read his$_1$/her$_2$ book.'

In (13), the reflexive pronoun *caki* refers to either the causer, 'Mr. Kim' or the casuee 'the girl', which suggests that both the causer and the causee are agents. Importantly, however, the reflexive pronoun cannot be bound by a causee in non- periphrastic causatives (Shibatani 1973; Whitman and Han 1988; Um 1995), as illustrated in the following (14):

(14) a. kimssi$_1$-ka ku sonye$_2$-eykey caki$_{1/*2}$-uy chayk-lul ilk-hi-ess-ta
Kim-NOM the girl-DAT self-GEN book-ACC read-CAUSE-PAST-DEC
'Mr Kim$_1$ made the girl$_2$ read his$_1$/*her$_2$ book.'

b. kimssi$_1$-ka ku sonye$_2$-eykey caki$_{1/*2}$-uy os-ul ip-hi-ess-ta
Kim-NOM the girl-DAT self-GEN clothes-ACC wear-CAUSE-PAST-DEC
'Mr. Kim$_1$ made his$_1$/*her$_2$ clothes to be put on the girl$_2$.'

In (14), the causee 'the girl' cannot bind the reflexive pronoun *caki* 'self', while the causer can be a binder. The binding facts indicate that the causee in Korean cannot be a semantic subject, being unable to bind the reflexive pronoun; in other words, the causee is not an agent.

The evidence presented in this section indicates that neither v_{DO}P nor VoiceP can be the complement to the causatives (in some languages). In the next section, I argue that the causatives take ApplP as a complement.

4.2 Applicative analysis

The essence of the previous discussion is that unlike a causer, a causee is not an agent (i.e., deliberate); therefore, merging this argument in the specifier of v_{DO} or Voice fails to capture the properties of a causee. In this section, I argue that causees are non-agents and thus must be licensed by Appl (cf. (9)).

The first evidence for the ApplP approach to causatives is that a complement to causative shows a similar argument structure make-up to that of a high applicative. This is illustrated with Korean and English causatives:

(15) a. Swuni-ka [Minswu-eykey chayk-lul ilk]-hi-ess-ta
Swuni-NOM Minswu-DAT book-ACC read-CAUSE-PAST-DEC
'Swuni made Minswu read the book.'

b. John had [Mary pick up a book].

In Korean (15a), the causer argument is nominative marked, the causee is dative marked, and the theme is accusative marked. The verb in the causative is marked with a causative morpheme. English (15b) shows a similar argument frame; a nominative causer, accusative causee and accusative theme. Thus, the

argument structure of the embedded clause in (15) indicated by square brackets fits with that of an applicative structure, in which there are two DPs.[11]

The two DPs in complements to causatives satisfy another syntactic property of the applicatives, that of showing an asymmetric c-commanding relation. For example, in Korean (16), the quantified dative argument c-commands the accusative pronoun as in sentence (16a) but not vice versa, as in sentence (16b):

(16) a. na-nun [motun cakkatul]$_1$-eykey kutul$_1$-uy chay-lul ilk-hi-ess-ta
I-TOP all authors-DAT their-GEN book-ACC read-CAUSE-PAST-DEC
'I made [all authors]$_1$ read their$_1$ books.'

b. *na-nun kukestul$_1$-uy cakkatul-eykey [motun chay-lul]$_1$ ilk-hi-ess-ta
I-TOP their-GEN authors-DAT all book-ACC read-CAUSE-PAST-DEC
'I made their$_1$ authors read [all books]$_1$.'

This is also true with English causatives:

(17) a. Mary had [each author]$_1$ read his$_1$ book.

b. *Mary had its$_1$ author read [each book]$_1$.

The discussion of the argument structure and the structural relation between the dative and theme arguments indicates that the complements to causatives satisfy the syntactic properties of applicatives where one DP merges higher than the other DP. Importantly, the semantics of the complement indicates that it belongs to the high applicative group. It is well established in Korean, either through implicit or explicit argumentation, that there is a thematic relation between the dative argument and the embedded clause, although there is no agreement on what type of a thematic relation it should be (e.g., Shibatani 1973; Whitman and Han 1988; Um 1995; Son 2006). Crucial to the present discussion is the fact that the embedded clause in causatives involves a thematic relation between an embedded subject (i.e., a dative argument) and an event, as in a high applicative, which is also noted in English *have* causatives (Cowper 1989; Ritter and Rosen 1997). A high applicative diagnostic proposed by Pylkkänen (2008), compatibility with a static verb 'hold', confirms this observation. In Korean (18) and English (19), causatives are compatible with the verb 'hold':

(18) Suni-ka Minsu-eykey chayk-lul tul-li-ess-ta
Suni-NOM Minsu-DAT book-ACC hold-CAUSE-PAST-DEC
'Suni made Minsu hold the book.'

(19) John had Mary hold the book.

The same pattern is also observed in Niuean. As illustrated in (20), the causative is compatible with the verb 'hold' (Massam et al. to appear).

(20) Kua fakatotō aki e ia e kato e tama haaku.
PERF CAUSE-hold APPL ERG.P 3.SG ABS.C basket ABS.C child 1.SG.GEN
'She made my child hold the basket.'

Further supportive evidence for the high applicative analysis of causatives is found in morphology. Note that in Niuean (20), a high applicative morpheme, *aki*, is employed as a tool to extend the argument structure of a causative verb (Massam et al., to appear). Similar interaction between

[11] Note that a dative marking is not an absolute criterion for an applied argument. In some Bantu languages, an applied argument (as well as a theme argument) is not dative marked and have the same marking with the theme argument (see Baker 1988 for data).

causative and applicative morphology is also found in Kinywarwanda. In this language, both constructions share the same morpheme, *-iish-* as illustrated in (21) (Kimenyi 1980). The syncretism between the causative and the applicative in Kinyarwanda lends further support to the applicative account for causatives in this paper.[12]

(21) a. úmwáálimu a-ra-andik-**iish**-a íbárúwa íkárámu
Teacher SUBJ-PRE-write-APPL-ASP letter pen
'The teacher is writing a letter with the pen.'

b. umugabo á-r-úubak-**iish**-a abanntu-inzu
man SUBJ-PRE.build-CAUS-ASP people house
'The man is making the people build the house.'

Importantly, in both Niuean and Kinyarwanda, the complement to causatives is shown to be non-agentive (cf. see (10c) for the former, and see Kimenyi for the latter language), as similar to those of Korean and English. Thus, the set of evidence provided in this section corroborates the proposed analysis (9) in which the complement to a causative is a high applicative.[13]

5 Consequences: applicative-selecting causatives and the semantics of Appl

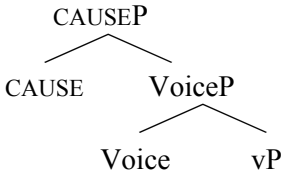
The current proposal suggests that causatives in some languages have a high applicative structure as a complement. To the extent that the present proposal is correct, it provides strong evidence for expanding the typology of the complement selection of causatives in Pylkkänen (2002, 2008): ApplP is a complement that causatives can select, in addition to VoiceP. Building on this expansion, I argue that there is a semantic distinction between Appl and Voice: Appl being non-agentive, in contrast to agentive Voice.

5.1 Applicative selecting causatives

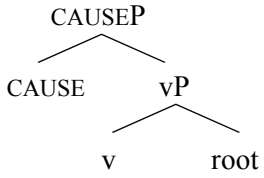
Pylkkänen (2002, 2008) proposes that the size of the complements of causatives can vary[14]: as mentioned earlier, there is a phase-selecting causative that selects a constituent that has an external argument (e.g., VoiceP) repeated in (22a), and there is a verb-selecting causative that selects VP without an external argument (22b). They are argued to be different with respect to the types of adverbs that can intervene between CAUSE and a root. These relations are presented in the table 1 with comparison to the languages (i.e., applicative selecting languages) discussed in the previous section.

[12] Similar to the current proposal, Marantz (1993) proposes that causatives and applicatives may have the same structure, based on the Kinyarwanda pattern in (21).
[13] A next question would be what type of a high applicative is involved in causatives. First of all, it is *not* benefactive, as the interpretation of the causatives indicates. ApplP in causative is not identical to benefactive ApplP as it does not introduce a benefactive, although they are similar in that both introduce non-agentive arguments, a benefactive and causee respectively. There is some morphological as well as historical evidence suggesting that a relevant high applicative is instrumental in Korean (see Kim 2008 for details), as is also the case in Niuean and Kinyarwanda causatives. A similar cross-linguistic observation is also made in Peterson (2007). In fact, Talmy (1976) notes that the causees must be understood as an instrument. Under the instrumental view, a causee could be understood as an instrument of which a causer makes use in order to cause a relevant event; in (15a), for example, a causer causes the event of 'reading a book' by employing the causee 'Minswu' as an instrument. However, the details of the type of the applicative are not crucial to the issues discussed in this section.
[14] There is another variation: a root-selecting causative. For the purpose of the paper, it is not discussed here.

(22) a. phase-selecting causative



b. verb-selecting causative



v: a verbalizing head; does not introduce an argument

Table 1 The correlation of the complement selection of causatives (Adopted from Pylkkänen 2008)

	Phase	**Verb**	**Applicative**
a. Agent-oriented modification of caused event is possible (due to the presence of VoiceP)?	Yes	No	No
b. High applicative morphology between root and CAUSE is possible?	Yes	No	Yes

Pylkkänen argues that there is a correlation between the properties (a) and (b). Causativization can embed a high applicative (b) if agent modification of the caused event is possible (a), and vice versa. Importantly, according to Pylkkänen, satisfying (a) indicates that the complement of causatives include VoiceP. Given this, she further argues that causativization can embed a high applicative (b) if it can embed VoiceP (a), and vice versa. These correlations hold with both phase-selecting and verb-selecting causatives: positively in phase-selecting causatives and negatively in verb-selecting causatives. In this sense, Pylkkänen argues that causativization treats Appl and Voice as 'a natural class'. However, the proposed structure in (9) shows that this correlation does not hold in applicative-selecting causative languages, as indicated in Table 1: an applicative-selecting causative embeds a high applicative (b) without embedding VoiceP (a). That is, the causatives are not phase-selecting causatives; nevertheless, they can embed a high applicative, against Pylkkänen's claim.[15] This empirical finding constitutes strong evidence for another type of complement selection, namely applicative selection.

5.2 Appl as introducing a non-agentive external argument

The presence of an applicative-selecting causative suggests that Pylkkänen's natural class treatment of Appl and Voice cannot be understood as in the sense of Pylkkänen. Even if a causativizer can embed ApplP, this does not necessarily imply that it can embed VoiceP, as evidenced by an applicative-selecting causative. From this outcome, it follows that the correlation with respect to an agent-oriented adverb modification does not hold either: although a causativizer can embed ApplP, this does not predict that its caused event can be modified by an agent-oriented adverb. I argue that this lack of correlation is due to the different semantics of Appl and Voice. Voice introduces an agent, but this is not the case for Appl. Due to its different semantics, ApplP patterns differently from VoiceP with respect to the scope of agent-oriented adverb modification. As demonstrated through the causatives in the section 4 (cf. Table 1), Appl in the causatives does not introduce an agent argument: applied arguments do not have deliberateness. Based on this empirical finding, I argue that the semantic contents of Voice and Appl are not the same, as illustrated below:

[15] Also note that applicative-selecting causatives do not belong to verb-selecting causatives. Although it does not allow agent-oriented modification of a caused event, it allows high applicative between CAUSE and root.

(23) a. Voice [AG] b. Appl

Voice is specified for the feature [AG], while Appl is unspecified for the feature. The presence of the feature in (23a) indicates that an argument introduced by Voice is an agent. The absence of the feature in (23b), on the other hand, indicates that an argument introduced by Appl is a non-agent.

6 Conclusion

I argued that some causees are not agentive, and thus they are introduced by Appl, contrary to the traditional assumption. As such, the proposed applicative account provides a novel view on a causee: in contrast to a causer, it is not a full-fledged agent. Under the current analysis, causatives select a high applicative that is a new type of a complement to causatives, which was absent in Pylkkänen (2002, 2008)'s classification. An applicative-selecting causative patterns differently from a verb-selecting causative in its being able to embed an external argument, and from a phase-selecting causative in its being incompatible with an agent oriented adverb.

I also argued that the difference between applicative- and phase-selecting causatives is due to different semantics of Appl and Voice: non-agentive vs. agentive. Hence, the applicative selecting-causatives constitute new evidence in favor of distinguishing Appl and Voice semantically. Although further cross linguistic research in this area will test the proposed analysis and its consequences[16], the range of facts captured by the proposal pose challenges for alternative views on causatives.

References

Alsina, Alex. 1992. On the Argument Structure of Causatives. *Linguistic Inquiry* 23:517–555.

Alsina, Alex. 1996. *The role of argument structure in Grammar: Evidence from Romance*. Stanford CSLI publication.

Baker, M. 1988. Theta Theory and the Syntax of Applicatives in Chichewa, *Natural Language and Linguistic Theory* 6:353–389.

Barss, A. and H. Lasnik. 1986. A note on anaphora and double objects. *Linguistic Inquiry* 17:347–354.

Bresnan, J. and L. Moshi 1993. Object Asymmetries in Comparative Bantu Syntax. In *Theoretical Aspects of Bantu Grammar 1.* ed, S. A. Mchombo, 50–93. Stanford: CSLI Publications.

Cole, P. 1983. The grammatical role of the causee in universal grammar. *International Journal of American Linguistics* 49:115–133.

Guasti, M. T. 1996. Semantic restrictions in Romance causatives and the incorporation approach. *Linguistic Inquiry* 27:294–313.

Givon, T. 1975. Cause and control: On the semantics of interpersonal manipulation. *Syntax and Semantics 4*:59–89.

Cuervo, C. 2003. Datives at large, Ph.D. dissertation, MIT.

Folli, R. and H. Harley 2005. Consuming results in Italian and English: Flavors of v. In *Aspectual inquiries*, eds. P. Kempchinsky, and R. Slabakova, 95–120. Dordrecht: Springer.

Folli, R. and H. Harley 2007. Causation, Obligation, and Argument Structure: On the nature of little v. *Linguistic Inquiry* 38: 197–238.

Folli, R. and H. Harley. 2008. Teleology and animacy in external arguments. *Lingua* 118:190–202.

Harley, H. 1995. Subjects, Events, and Licensing, Ph.D. dissertation, MIT.

Harley, H. 2006. On the causative construction. To appear in *The Handbook of Japanese Linguistics*, eds. S. Miyagawa and M. Saito. Oxford: Oxford University Press.

Hale, K., and S. J. Keyser. 1993. On Argument Structure and the Lexical Expression of Syntactic

[16] The semantics of Appl as argued in this paper appears to play a role in the mal-/ben-efactive constructions and indirect passives in a wide range of languages, as shown in Kim (2009); for instance, malefactives in English experiencer *have*, mal-/ben-efactives in German, and affectees in Korean and Japanese passives.

Relations. In *The view from building 20: essays in linguistics in honor of Sylvain Bromberger*, eds.Kenneth Hale and Samuel Jay Keyser, 53–109. Cambridge, MA: MIT Press.
Kang, M. Y. 1997. Bare phrase approach to Korean morphological causative/passive construction. *Language Research* 33:79–100.
Kiguchi, H. 2006. Phases and locality constraints on A-movement in Japanese. *Studia Linguistica* 60: 34–63.
Kim, A.-R. 1998. VP complements of HI-causative. *Japanese/Korean Linguistics* 8, ed, D.J. Silva. 445–457.
Kim, H.-S. 2005. Causatives, passive and their ambiguities in Korean, Japanese, and English. Ph.D. dissertation, University of Michigan.
Kim, K.-M. 2008. Applicatives in Korean causatives and passives. Ms. University of Toronto.
Kim, K.-M. 2009. Applicatives and the structure of passive in Japanese and Korean. Ms. University of Toronto.
Kimenyi, A. 1980. *A relational grammar of Kinyarwanda*. Berkeley: University of California Press.
Kratzer, A. 1996. Serving the external argument from its verb. In *Phrase Structure and the Lexicon*, eds. J. Rooryck and L. Zaring, 109–137. Dordrecht: Kluwer Academic Publishers.
Kuroda, S.-Y. 1965. Generative grammatical studies in the Japanese language. Ph.D. dissertation. MIT.
Kuno, S. 1973. *The structure of the Japanese language.* MIT Press. Cambridge, MA.
Lee, H.S. 1985. Causatives in Korean and the Binding Hierarchy. Papers from the Regional Meetings, *Chicago Linguistic Society* 21(2):138–153.
Lee, S.C. 1986. Passives and causative construction in Korean: towards a universal characterization in terms of categorical grammar. Ph.D. dissertation. The University of Texas at Austin.
Lee, W.-B. 2005. Causative verb constructions in Korean. In *Issues in Current Linguistic Theory: A Festschrift for Hong Bae Lee*, eds. C. Kwon and W. Lee, 269–290. Seoul: Kyungchin.
Marantz, A. 1993. Implications of asymmetries in double object constructions. In *Theoretical Aspects of Bantu Grammar*, ed. S. A. Mchombo, 113–150. Stanford: CSLI Publications.
Massam, D., Issac G. and P. Patchin. To appear. Faka-Niue: Understanding cause in Niuean. *Toronto Working Papers in Linguistics*.
McGinnis, M. 2001. Phases and the Syntax of Applicatives. *NELS* 31: 333–349.
McGinnis, M. 2002. Object Asymmetries in a Phase Theory of Syntax. Paper presented at *Proceedings of the 2001 CLA Annual Conferences*, University of Ottawa.
McGinnis, M. 2004. Lethal Ambiguity. *Linguistic Inquiry* 35:47–95.
Miyagawa, S. 1999. Causatives. In *The handbook of Japanese linguistics*, ed. N. Tsujimura, 236–268. Oxford: Blackwell.
Mohanan, K.P. 1988. Causativization in Malayalam. Ms. Stanford University, Stanford, California
Park, J.-W. 1994. Morpholgoical Causatives in Korean: Problems in grammatical polysemy and constructional relations, Ph.D. dissertation, University of California, Berkeley.
Parsons, T. 1990. *Events in the Semantics of English: A Study of Subatomic Semantics*. Cambridge: MIT Press.
Peterson, D. A. 2007. *Applicative construnctions*. Oxford: Oxford University Press.
Pylkkänen, L. 2002. Introducing arguments, Ph.D. Dissertation, MIT.
Pylkkänen, L. 2008. *Introducing arguments.* Cambridge: MIT press.
Ritter, E., and S. Rosen. 1997. The function of *have*. *Lingua* 101: 295–321.
Rizzi, L. 1986. Null objects in Italian and the Theory of pro. *Linguistic Inquiry* 17:501-557.
Shibatani, M. 1973. Lexical versus periphrastic causatives in Korean. *Journal of Linguistics* 9:281–297.
Song, J. J. 1996. *Causatives and causation: A universal-typology perspective*. London: Longman.
Song, J.J. 2005. Non periphrastic causative construction. In *The world Atlas of language structures*, eds., M. Haspelmath, M. S. Dryer, D. Gil, and B. Comrie. 450–453. Oxford: Oxford University Press
Song, S. C. 1988. *Exploration in Korean Syntax and Semantics*. Berkeley, California: Center for Korean Studies, Institute of East Asian Studies, University of California.
Son, M. J. 2006. Causation and syntactic decomposition of events, Ph.D.dissertation, University of Delaware.
Talmy, L. 1976. Semantic Causative Type. In *Syntax and Semantics: the grammar of causative constructions*, ed. M. Shibatani, 43-116. New York: Academic Press.

Um, H.-Y. 1995. Argument structure of Korean causatives. In *Harvard Studies of Korean Linguistics* 6. eds, S. Kuno et al. 423–428.
Van, Valin, D, R., and D. P. Wilkins. 1996. The Case for Effector: Case Roles, Agents and Agency Revisited. In *Grammatical construction*, eds. M. Shibatani and S.A. Thompson, 289-322. Oxford: Clarendon Press.
Whitman, J. and S. Hahn.1988. Korean morphological passive/causatives. In *Papers from the Sixth International Conference on Korean Linguistics*, ed. E.-J. Baek, 714–727. University of Toronto.
Yeon, J. H. 1991. The Korean causative-passive correlation revisited. *Language Research* 27: 73–58.

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The effects of character knowledge on understanding parts of speech of Chinese two-character compounds

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This study posited that if learners have possessed the knowledge of component character meanings and inner relationships of compounds, they may derive new compounds' parts of speech. An experiment was conducted with 40 English-speaking learners. The results demonstrated: In character-condition, parts of speech of high-transparency compounds were significantly better derived then those of middle transparency compounds, but in context-condition, high-transparency compounds were not significantly better derived then those of middle transparency compounds. For all target words, character-condition is more informative than context-condition in accessing parts of speech); but for middle-transparency words, character-condition was less informative than context-condition, although not significantly. Based on the results, this paper proposed that morphological information may play more important roles in accessing novel compounds' parts of speech in Chinese than in other languages because of the characteristics of Chinese word-formation and syntax.

1 The debate on the basic unit of Chinese

From the moment that modern Chinese linguistics was built, most Chinese linguists have been trying to describe the Chinese system with linguistic theories based on Indo-European languages, meaning that WORD, which is defined in the Western sense, is regarded as the basic unit for analysing the Chinese system. Accordingly, instructors teach non-native learners of Chinese using words as a whole, without explaining the component characters of compounds, while native learners are still taught from characters to words.

There were a few linguists who noted that "the word unit in Indo-European languages is one of those conceptions that have no exact counterpart in Chinese" (Yuenren Chao, 1975), "words" are ready-made in Indo-European languages, and the task of linguists is to determine morphemes by reducing, deducing and producing (Lv Shuxiang, 1963); on the other hand, the basic units of Chinese vocabulary still are single characters (Lv Shuxiang, 1962), Chinese operates by the unit of characters, not of words (Wang Li, 1982). Although modern Chinese has a great number of polysyllabic words, it would be oversimplifying the situation if we take Chinese polysyllabic words equal to English words (Yuenren Chao, 1975).

In the past ten years, a growing number of studies have attached more importance to characters. These researchers have tried to build up a theory more adequately explaining the Chinese system, which is now known as the Sinogram[1] as Basic Unit (SBU) Theory (Yang Zijian, 2007:1). They argued that Chinese characters are different from morphemes in Indo-European languages: in Indo-European languages, words are natural basic units, and morphemes are analytically separated from words; whereas in Chinese, characters are the natural basic units, for characters are ready-made, discrete and psychologically realistic, whereas words are just derivatives from characters (Xu Tongqiang, 1992, 1997:431, 1998). Hence, some researchers suggested that L2 learners should be taught individual characters, too, otherwise they will have difficulty improving their Chinese in many aspects (Zhang &

[1] The word "sinogram" is adopted in this theory to distinguish from the word "character" which is usually used to indicate the writing symbol. This paper still used the term "character" just because it is more common used.

Peng, 1992; Zhang Kai, 1997; Chen Xi, 2002; Zhao Guo, 2002; Yi Zhengzhong, 2003; Chen Hui & Wang Kuijing, 2001; Feng Liping, 2003; Jiang Dewu, 2004).

2 The semantic transparency of Chinese two-character compounds

In Ancient Chinese, characters stood alone as words, and Modern Chinese still uses the basic one-character words. Now there are three kinds of words in Modern Chinese: one-character words, which are the radical words inherited from Ancient Chinese; two-character compounds, which make up the majority of Modern Chinese vocabulary; and compounds consisting of more than two characters, some of which often have two-character abbreviations.

Some research demonstrated that Chinese compounds are semantically transparent. The notion of semantic transparency has been defined as the degree to which a morphologically complex word's meaning can be derivable from meanings of morphemic constituents: stems and affixes (Marslen-Wilson et al., 1994). According to the Chinese Morpheme Data Bank (Yuan Chunfa & Huang Changning, 1998), there are only 220 compounds which are totally different from their constituent morphemes[2], and 190 of them are items' names; Chinese morphemes have been stable for a long period, most morphemes maintain their individual meanings in compounds, and the few meaning changes are traceable and explainable.

Furthermore, although novel Chinese words have been rapidly growing in recent years, characters maintain their number, only a few novel characters have been invented (Lu Chuan, 2003). Some studies indicated that there are 1/3 of novel compounds whose overall meanings are totally equal to their component characters combined, and more than 1/3 of novel compounds whose overall meanings can be partly predicted by their component characters (Shen Mengying, 1995). In addition, meaningless characters of transliterated words from foreign languages tend to semantize. For example: meaningless characters "咖" of "咖啡" (coffee) and "的" of "的士" (taxi) have gained meanings of their words respectively and can be used to make up new compounds such as "热咖" (hot coffee), "冰咖" (ice coffee), "打的" (to take a taxi), "的哥" (taxi driver) (Wei Huiping, 2002; Song Zuoyan, 2003). These studies revealed how the Chinese language can completely meet speakers' needs by maintaining a stable quantity of characters, and how Chinese native speakers coin and access novel forms (Lu Chuan, 2003).

Thus, every character, whether it functions independently as a word, or functions as a component of compounds, generally has its own meaning.

3 The inner relationships and parts of speech of two-character compounds

The fact that Chinese words do not have word-ending inflections has led to lasting debates on how to determine the part of speech of Chinese words. Meaning has been excluded from the two standards used to determine part of speech since the debate on parts of speech, and the only standard accepted is their syntactic function, which is indicated by the syntactic positions of words in sentences(Zhu Dexi, 1985:10).This viewpoint has generally reached an agreement among Chinese linguists.

Based on the fact that the component characters of Chinese compounds share certain inner relationships, such as subject-predicate, verb-object, modifier-center, co-ordination and predicate-complement relationships, which are almost identical to Chinese syntactic structures (Zhu Dexi, 1982:32), Lu Jiaxiang, et al. (1981) proposed that the inner relationships can function as another standard to examine compounds' parts of speech. He investigated 2248 compounds out of the 3000 highest frequency words, and found out that compounds' parts of speech can be determined by their inner relationships to a great extent: 98.34% of verbs, 97.56% of nouns and 85.10% of adjectives have inner relationships which can directly reflect their part of speech. Dai Zhaoming (1988) completely negated this viewpoint and regarded it as an error in the sense of methodology and philosophy, although he admitted that there are

[2] Chinese charactes are theoretically different from morphemes, but in some cases they can be interchangeable, so some linguists regard character as the same as morpheme. The debate over this topic is beyond this article.

83.27% of compounds of which the part of speech can be determined by their inner relationships, according to his own analysis. After that, using character knowledge to access compounds' parts of speech has been rarely discussed and taken to be unacceptable, because the inner relationships of SOME compounds do not seem to indicate their parts of speech.

However, because the parts of speech of Chinese words do not correspond to their syntactic positions as for English words (Zhu Dexi, 1985:14), it is quite difficult for L2 learners to access the parts of speech of Chinese words just from context. And, if the contextual information does not provide syntactic positions variable enough for a certain word, then learners can come to a wrong conclusion about this word's part of speech. Considering the high rates of correspondence between the inner relationships and the part of speech (Lu Jiaxiang, et al., 1981; Dai Zhaoming (1988), and that contextual information and word morphology are two major sources that learners use to interpret novel words (Morrison, 1996; De Bot, Pariakht, & Wesche, 1997; Paribakht & Wesche, 1999), this paper examined two hypotheses:

1) L2 learners understand the parts of speech of two-character compounds with higher transparency than lower ones.
2) L2 learners understand parts of speech of two-character compounds based on character knowledge worse than based on context.

"Character knowledge" in this paper refers to the meanings and the inner relationships of compounds' component characters together.

4 Method

4.1 Participants

There were 40 participants, 30 in the experimental group (character-condition), 10 in the control group (context-condition). The participants were English-speaking students learning Chinese at the intermediate level at Peking University. Korean, Japanese and Vietnamese learners were excluded, for they may already have character knowledge from their native languages.

4.2 Instruments

This investigation determined the target words by four steps: First, 60 two-character compounds were chosen from some readers, including 30 modifier-center and 30 verb-object words. Second, participants were asked to identify the compounds they already knew, and 50 compounds were left. Third, 20 native Chinese graduate students majoring in linguistics rated the transparency degree of these words using a six-grade table, the averaged points of the two component characters gave the final points of each word. Fourth, 24 target words were randomly selected, and 24 corresponding short paragraphs were selected as context from some readers which were published for L2 learners at this level. All the paragraphs can express meanings independently to some degree from their contexts. These were the target words:

	Modifier-center	Verb-object
High-transparency	6 items	6 items
Middle-transparency	6 items	6 items

4.3 Procedure

Participants were tested in class within 40 minutes.

4.3.1 The experimental group (character-condition)

First, participants were given 5 minutes to read materials incorporating 12 already well-known words including 6 modifier-center and 6 verb-object words, which were comprised of 2 nouns, 2 verbs, and 2 adjectives in each kind of words. These materials indicated that component characters of compounds have their own meanings and share certain relationships and can make different parts of speech.

Second, participants classified 10 familiar words according to their inner relationships in 3 minutes (5 modifier-center and 5 verb-object words) to show whether they understood the structures of the compounds. Answers were presented after the pretest to help them understand.

Finally, the target words were presented like this: each character was translated into English which indicated that one character may have more than one meaning. Then participants were given 30 minutes to finish the questions: they had to write the meanings and parts of speech of each compound.

4.3.2 The control group (context-condition)

First, participants were given 5 minutes to read instructions in English which indicated that readers can derive meanings of new words based on contextual clues. Second, one test compound was provided in the context of a short passage in 5 minutes. Finally, participants also were given 30 minutes to complete the same questions as in the experimental group.

4.4 Data coding and results

The answers were rated by 2 native English speakers and the experimenter. For parts of speech, answers were rated along a two-point scale: no answers or wrong answers received 0 points, right answers received 1 point; for meanings, answers were rated along a three-point scale: no answers or answers with no semantic overlap received 0 points, with part overlap received 1 point, and with identical meanings received 2 points.

Based on SPSS analysis, the results partly supported hypothesis 1: In character-condition, parts of speech of high-transparency compounds were significantly better derived then those of middle transparency compounds ($t(1,29)=3.927$, sig(tailed-2)=0.000, $0.000<0.05$), but in context-condition, high-transparency compounds were not significantly better derived then those of middle transparency compounds($t(1,9= -1.978$, sig(tailed-2)=0.079, $0.079>0.05$).

For 10 samples, selected randomly from a total of 30 in the character-condition, a Paired-Samples T Test between character-condition and context-condition partly negated hypothesis 2: altogether, character-condition is more informative than context-condition in accessing parts of speech ($t(1,9)=3.875$, sig(tailed-2)=0.004, $0.004<0.05$); but for middle-transparency words, character-condition (mean: 6.1000) was less informative than context-condition (mean: 6.7000), although not significantly ($t(1,9)= -.678$, sig(tailed-2)=0.515, $0.515>0.05$).

Thus, we may conclude that, when accessing compounds' parts of speech, the semantic transparency degree interacts with the character-condition in an obvious way, but in context-condition, semantic transparency may play the same role in accessing parts of speech of compounds.

5 Discussion

5.1 The overall word meaning and the part of speech

It has been generally accepted that word meaning cannot function as a standard to define the part of speech of a word, as words expressing homologous meanings may possess different grammatical functions and, therefore, different parts of speech (Zhu Dexi, 1985:10). A correlation coefficient test between the meanings and the parts of speech in character-condition and in context-condition respectively showed that in character-condition, meaning understanding significantly correlated with understanding parts of speech ($p=0.743$, sig(tailed-2)=0.000, $0.000<0.05$), while in context-condition, the correlation coefficient was insignificant ($p=0.622$, sig (tailed-2)=0.055, $0.055>0.05$).

Several differences between character-condition and context-condition may account for this discrepancy: component characters' meanings and grammatical functions provided in character-condition can contribute to understanding parts of speech, whereas context-condition only offered contextual information to access parts of speech. Thus, the component character knowledge contributes more to accessing parts of speech than the compounds' overall meanings. Some answers in character-condition demonstrated that learners may process word meanings and parts of speech separately: one learner used the noun of "promotion" to explain the word "提职" but took "提职" as a verb; another learner used the noun of "exotic flavor" to explain the word "野味", but took it as an adjective.

However, it does not mean that the overall meanings always contribute less than the component character knowledge to understand parts of speech. Even in the character-condition, if compounds' inner relationships do not directly reflect their parts of speech, the overall meaning may exert more positive influence than the component character knowledge on accessing parts of speech. For example the word "无礼" (impolite), whose inner relationship does not correspond to its part of speech, still was as high as 86.67% correctly understood by learners in character-condition, perhaps because this Chinese word has a counterpart in English both in meaning and in part of speech.

5.2 Factors which influence understanding parts of speech in character-condition

As demonstrated by the SPSS results, the degree of semantic transparency played a key role in accessing compounds' parts of speech in character-condition, high transparency compounds' parts of speech were more easily accessed then those of middle transparency compounds.

Besides that, the inner relationships between and the grammatical functions of component characters can influence understanding parts of speech, too. The results demonstrated that misunderstanding of the inner relationships led to misunderstanding parts of speech. For example, the learners who took "思路" (train of thought) as a noun offered answers like "look for direction, ask direction", which showed that they mistook the modifier-center inner relationship of "思路" for the verb-object one, and defined the part of speech as a verb according to the center character's grammatical function, i.e., the verbal character "思". This also happened with "分店" (branch store).

It is interesting to note that the inner relationships of Chinese compounds are almost identical to Chinese syntactic structures (Yang Zijian, 2007:36), so Chinese syntactic structures can shed light on understanding compounds' inner relationships. However, there is a big difference between lexical structures and syntactic structures: the syntactic structures' grammatical functions are consistent with their centre characters' grammatical functions, for example, a verb-object syntactic structure is always verbal; whereas compounds' parts of speech sometimes can be inconsistent with their centre characters' grammatical functions, for example, a verb-object compound can function as an adjective, although according to Lu Jiaxiang, et al. (1981), this inconsistency only accounts for a very small percentage(1.66% of verbs, 2.44% of nouns and 14.90% of adjectives). Thus, if a compound's part of speech is consistent with the grammatical property of its centre character, the compound's morphological structure will be more illuminated by the corresponding syntactic structure, then it would be more easily for learners to access the compound's part of speech.

And, the closer to the prototype of certain syntactic structure a compound's grammatical arrangement, the easier for learners to access this compound's part of speech. For example, among all modifier-center compounds, "思路" and "分店" were regarded as verb-object words much more easily than other words, even some of which are less semantically transparent. The explanation may lie in their grammatical arrangement: the first characters of "思路" and "分店" are generally used as verbs, and the second ones are nouns. This verb-noun arrangement is the most typical arrangement of verb-object syntactic structure. By contrast, there was no one who took another modifier-center word "攻读" (to study hard) as a verb-object one, maybe it is because both of its characters generally act as verbs, and this verb-verb arrangement does not make a typical pattern of verb-object.

5.3 The effectiveness of character knowledge and context

As mentioned before, the statistical analysis showed that character-condition was more informative than context-condition in accessing parts of speech, which is different from Yoshiko Mori's results (2003).

Yoshiko Mori (2003) explored differences between context and word morphology as determinants of students' guesses of the meanings of novel kanji compounds (i.e., words consisting of two or more Chinese characters), and found out that contextual clues generated more syntactically related guesses than did kanji clues, whereas kanji clues yielded more semantically related guesses than did context: the students' guesses from kanji clues only were somewhat related to kanji compounds' notion, but differed in the part of speech; by contrast, their guesses based on contextual clues were words or phrases with same part of speech, but appeared less semantically related than those based on kanji clues. Yoshiko Mori (2003) suggested that this finding is reasonable because comprehensible local context usually determines the part of speech of an unknown word (Cziko, 1978), "whereas, with some exceptions, kanji compounds do not usually contain overt syntactic information. In many cases, the grammatical function of a kanji word is indicated by an affix represented in hiragana or a postpositional particle. Thus, students must pay attention to the immediate context in order to determine the part of speech." (2003:411)

Thus, this research contradicts the "general rule" proposed by Cziko (1978), which may be interpreted by the characteristics of Chinese.

First, Chinese words of certain parts of speech do not take certain fixed syntactic positions in sentences as English words do (Zhu Dexi, 1985:14), as presented in §3. For example, without any change in form, a Chinese verb can function as a predicate, an object, a subject, or a modifier; an adjective can act as a predicate, a modifier to a noun, a modifier to a verb, a subject, or an object; a noun can be a subject, a object, a modifier to another noun, a modifier to a verb, or a predicate. These complicated variants can make learners confused and even mislead them to access a word's part of speech in context condition.

Second, Chinese compounds' inner relationships correspond to Chinese syntactic structures, thus, as mentioned previously, Chinese syntactic structures can shed light on the understanding of compounds' inner relationships. So Chinese L2 learners could more easily perceive novel compounds' inner relationships based on their Chinese knowledge and derived their parts of speech eventually. On the other hand, as Japanese differs from Chinese in syntax, Japanese syntactic rules may contribute less to a learner's ability to guess the part of speech of kanji compounds whose inner relationships are similar to those of Chinese compounds. In conclusion, word morphology may have a much stronger effect on understanding novel compounds' parts of speech in Chinese than in Japanece and even other languages.

Third, and may be the most important and controversial, most Chinese compounds' inner relationships are consistent with their parts of speech, as demonstrated by Lu Jiaxiang, et al. (1981). According to Lu Jiaxiang, et al. (1981), among the 2248 highest frequency compounds, there are 98.34% of verbs, 97.56% of nouns and 85.10% of adjectives whose inner relationships can directly indicate their parts of speech. Even Dai Zhaoming (1988), who objected to adopting inner relationships as the standard to define compounds' parts of speech, admitted that there are 83.27% of compounds whose parts of speech can be directly determined by their inner relationships. The Chinese Morpheme Data Bank built by Yuan Chunfa & Huang Changning (1998) supported the viewpoint of Lu Jiaxiang, et al. (1981). They suggested that in Chinese, compounds' grammatical functions are generally consistent with their morphemes' grammatical functions: most noun compounds consist of nominal morphemes, which generally take the later position in a compound; most verb compounds are made of verbal morphemes, which are arranged in the patterns of "verb+verb" (44.7%), "verb+noun" (34.1) and "adjective+verb" (7.2%); most adjectives are composed in the pattern of "adjective+adjective"(67.3%). Wang Hongjun (1994, 1998, 2007) conducted more specific research on the rules that characters form compounds. She resolved the problem that there are minority compounds whose parts of speech are not consistent with their inner relationships, proving that word-formation rules exist among those compounds. She even presented the correspondence rules between the semantic arrangement and the grammatical function arrangement of component character in compounds. For example,

Semantic	action+entity →activity	Intention/ability+controllable action → property
Grammatical function	Bivalent, transitive verb+noun → intransitive verb	auxiliary verb+controllable verb →adjective

It is noteworthy that the results of this research do not negate or contradict the standard of syntactic functions to determine compounds' parts of speech. Actually, the present research supports the idea that the definition of part of speech is rooted in syntactic function. Nonetheless, based on those studies presented before, it is reasonable to suggest that character knowledge can play as important a role in defining compounds' parts of speech as inflections do in Indo-European languages, and this approach can be much simpler and more efficient than using compounds' syntactic positions, just like inflections do.

6 Pedagogical implications

Although in the current Chinese teaching system L2 learners are generally taught words as a whole, without being informed of the meanings of, and inner relationships between, component characters, they have naturally developed some awareness of character knowledge to some degree by themselves, which was proved by some aspects in this experiment. As the present experiment adopted characters to present target words in context-condition, some answers demonstrated that learners sometimes used their character knowledge in context-condition. For example, there were some answers which are semantically related to compounds' component characters, but have nothing to do with the contextual information. Thus, language instructors need to do something to meet learners' potential demands of developing their character knowledge, otherwise they will have to develop this kind of knowledge by themselves in an ambiguous or inefficient way, which can lead to some confusion in further learning.

It is logical to believe in the advantage of combined sources of morphological and contextual information in accessing new words' meanings, which has been proved by Yoshiko Mori's (2003) research. But taking into consideration the complicated relationship between parts of speech and syntactic functions in Chinese, it is hard to say whether contextual and morphological clues will work additively or not when accessing compounds' parts of speech. And, it is not very realistic for learners, especially the beginners, to combine so many variables to access one word's part of speech, not to mention that one word usually occurs only in one position with limited contextual information. Therefore, given that learners have learned adequate word-formation rules, using character knowledge to determine compounds' parts of speech will be convenient and efficient.

Of course, contextual information will be beneficial for learners to expose themselves to more specific functions of words, but morphological clues should not be overlooked. Some researchers have noticed the importance of inner information contained in compounds. For example, there is one kind of Chinese verb-object compound whose component characters sometimes work together like other compounds, and sometimes work separately like a dependent verb with a noun object. Zhu Zhiping (2002) proposed that it is necessary to examine the grammatical functions from their inner constituents. In conclusion, Chinese compounds need more specific examination from the perspective of inner information, which is based on character knowledge.

References

Cziko, G., 1978, Differences in first- and second-language reading: The use of syntactic, semantic,and discourse constraints. *Canadian Modern Language Review,* 34, 473-489.

Chen Hui, Wang Kuijing, 2001, The experimental study on recognition of Chinese pic-tophonic characters by foreigner students, *Chinese Teaching In The World*, 2, 75-80.

Dai Zhaoming ,1988, 《现代汉语合成词的内部结构与外部功能的关系》,《*语文研究*》,4, 21-28.

De Bot, Pariakht, & Wesche, 1997, Toward a lexical processing model for the study of second language vocabulary acquisition. *Studies in Second Language Acquisition*, 19, 309-329.
Feng Liping, 2003;The Analysis of Laws in Recognition of Chinese Words by Intermediate Foreign Learners, *Journal of College of Chinese Language and Culture of Jinan University,* 3, 66-71.
Jiang Dewu, 2004, Some thoughts on the Syllabus of Graded Words and Characters for Chinese Proficiency,*Chinese Teaching In The World*, 1, 81-89.
Lu Chuan, 2003, Root-grams and Gram-families in Chinese Language, *Chinese Language Learning*, 3, 1-10.
Lu Jiaxiang, et al., 1981,《汉语词类划分标准初探》,《*浙江师范学院学报》(社*》,2, 40-46.
Marslen-Wilson, W.,Tyler, L., Waksler, R., & Older, L., 1994, Morphology and meaning in the English mental lexicon. *Psychological Review,* 101, 3–33.
Morrison, L., 1996, Talking about words: A study of French as a second language learners' lexical inferencing procedures. *Canadian Modern Language Review,* 53, 41-75.
Paribakht, T.S., & Wesche, M., 1999, Reading and "incidental" L2 vocabulary acquisition: An introspective study of lexical inferencing. *Studies in Second Language Acquisition*, 21, 195-224.
Shen Mengying, 1995, 《关于新词语词义表面化的倾向》,*Applied Linguistics*, 4, 66-72.
Song Zuoyan, 2003,Semantisation of meaningless Chinese characters and the encoding mechanism of restrictive character combinations in Chinese,*Chinese Teaching In The World*,4, 44-52.
Wei Huiping, 2002,The First Research of Chinese Foreign Morpheme,*Chinese Language Learning*, 1, 28-32.
Wang Hongjun, 1994, 《从字和字组看词和短语--也谈汉语中词的划分标准》, *Chinese Language*, 2, 102-112.
Wang Hongjun,1998, 《从与自由短语的类比看"打拳"、"养伤"的内部结构,*Linguistics Researches*, 4, 1-11.
Wang Hongjun, 2007, Zi as the basic unit and teaching Chinese as a second language, *Journal of Chinese Language Studies,* 3, 58-71.
Wang Li, 1982, see Yang Zijian, 2007, *《字本位理论与应用研究》*, 3, Shandong Education Press。
Xu Tongqiang , 1992, see Xu Tongqiang, 1994, 《"字"和汉语的句法结构》, *Chinese Teaching in the World*, 2, 1-9.
Xu Tongqiang , 1997, *《语言论》*, 431, Northeast Normal University Press.
Xu Tongqiang, 1998, 《说"字"》, *Linguistic Researches*, 3, 1-12.
Yang Zijian, 2007, *《字本位理论与应用研究》*, Shandong Education Press。
Yoshiko Mori, 2003, The roles of context and word morphology in learning new kanji words, *The Modern Language Journal,* 87, **Error! Reference source not found.**, 404-419.
Yuan Chunfa, Huang Changning, 1998, 《基于语素数据库的汉语语素及构词研究》, *Chinese Teaching in the World,* 2, 83-88.
Yuenren Chao, 1975, Rhythm and Structures in Chinese Word Conceptions, see *Linguistic Essays by Yuenren Chao*, 983-988, The Commercial Press, 2006.
Zhang, B.Y. & Peng, 1992,Decomposed Storage in Chinese Lexicon, see Chen H.C. and Tzeng, O.J.L., eds., *Language Processing in Chinese.* Amsterdam: North-Holland, 131-49.
Zhang Kai, 1997;《汉语构词基本字的统计分析》, *Language Teaching and Linguistics,* 1, 42-51
Zhao Guo, 2002, wo- "in" woguo", *Chinese Language Learning*, 4, 67-72.
Zhu Dexi(1982), *《语法讲义》*, The Commercial Press, 1999.
Zhu Dexi(1985), *《语法答问》*, The Commercial Press, 2000.
Zhu Zhiping, 2005, *《汉语双音复合词属性研究》*, Peking University Press.
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American English *iz*-Infixation: interaction of phonology, metrics, and rhyme

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The insertion of [ɪz] (e.g. *house* → *h**iz**ouse*) is a phenomenon that is prevalent in the American English hip-hop community in music and, increasingly, spontaneous speech. Infixation into monosyllabic words has a clear pattern of insertion between onset and rime. The infixation pattern into bisyllabic base words shows that the *iz*-infixation form is directly affected by the unaffixed form's stress (Viau 2006); however, a number of multisyllabic infixed forms do not follow the predicted pattern. In this paper, I show that the usage of *iz*-infixation appears to be encouraged by factors that are exterior to the word itself—namely, constraints on textsetting/meter (following Hayes 2005) and poetic rhyme (following Zwicky 1976 and Holtman 1996). I also demonstrate that these factors can be used to explain the multisyllabic forms that do not fit the purely stress-governed pattern. Lastly, I discuss segmental anomalies related to *iz*-infixation.

1 Introduction

The insertion of [ɪz][1] (*house* → *h**iz**ouse*) is a process that is prevalent in the American English hip-hop community. Like English Homeric Infixation (Yu 2004), *iz*-infixation began as a language game (Viau 2006) that proliferated due to its appearance in pop culture. *Iz*-infixation has been used in hundreds of hip-hop songs during the past thirty years, and has also evolved into a construction used in spontaneous speech in certain dialects. This phenomenon has been studied in Viau (2002, 2006) and Lindsay (2006), but has otherwise received minimal attention.

An important characteristic of *iz*-infixation is that, unlike infixation cases in many other languages, the process of *iz*-infixation is not a required part of the grammar of this language, although there are a few infixed forms that have become lexicalized. The process may be used for obscuring profanity (e.g. "dizamn" for "damn") or expressing "a hint of joviality" (e.g. "Whassup in da hizzouse?")[2], though these are not required. The *iz*-infixation process is similar to infixation in languages such as Samoan (Broselow & McCarthy 1983) in that the stress of the original, *unaffixed* form plays a crucial role. In hip-hop music, *iz*-infixation can be used to change the meter, emphasis, or rhyme of a prosodic phrase; it is these usages that will be the focus of this paper.

By and large, the pattern of *iz*-infixation is quite straightforward. In the basic case, there are three fundamental considerations involved in predicting the infixed form of a word: (i) the position of [ɪz] within the syllable, (ii) the position of [ɪz] within the word, and (iii) the output stress position.

Cases of *iz*-infixation are bolded in the following example[3]:

(1) I'm still standin' **strizong** (*strong*)
And waitin' on my **thrizone** (*throne*)
And live for the **dizzay** (*day*) that God calls me **hizome** (*home*)
Until then I'll **rizzoam** (*roam*), the face of the **Izzerth** (*Earth*)
And shoot for the **stizars** (*stars*), on days of my **bizzerth** (*birth*)
—Playa Fly, "N God We Trust"
(from *Original Hip-Hop Lyrics Archive*)

[1] In addition to [ɪz], there are other closely related variants that follow the same pattern: [id], [in], [ig], [izn], and [izm]. There are also related truncation forms: *-izzy*, *-izzo*, etc. I will not focus on any of these phenomena here.
[2] From the "Slanguage Dictionary" of the University of Georgia (english.uga.edu/dawgspeak/hiphophelp.html).
[3] All of the iz-infixation data in this paper come from the Original Hip-Hop Lyrics Archive (ohhla.com), totaling 1031 infixed tokens (525 types) in the lyrics of 34,444 songs.

First, let us consider infixation of monosyllabic words, which will allow us to focus on the position of [ɪz] within the syllable.

(2) Monosyllabic base forms:

	Non-infixed		*Infixed*	
a.	[deɪ]	→	[dɪ́.zeɪ]	'day'
b.	[strɔŋ]	→	[strɪ́.zɔŋ]	'strong'
c.	[ɝθ]	→	[ɪ́.zɝθ]	'Earth'

In (2a-b), we see that the infixation occurs between the onset and the rime. Example (2b) in particular shows that this is also true in complex onsets. There are no cases in the corpus where phonotactics force the infix into any other position in the syllable. In words such as (2c) with no onset, [ɪz] is attached as a prefix. In all three examples, the affix itself is divided across two syllables, leaving [ɪ] in an open syllable and [z] as the onset of the second syllable. Prosodically, all three infixed structures are essentially identical; each has penultimate stress. When bisyllabic base forms are considered in the next section, we will see that stress position directly affects the placement of the infix.

With monosyllabic words, there is only one target for *iz*-infixation. When bisyllabic words are considered, there are now two potential targets: the first syllable and the second syllable. Words with initial stress have corresponding infixed forms following the pattern of (3) below.

(3) Non-infixed form has **initial** stress

	Non-infixed		*Infixed*	*Meaning*
a.	[**mɛ́**.rəl]	→	[mɪ.zɛ́.rəl]	'medal'
b.	[**sóʊ**ɪ**l**.dʒerz]	→	[sɪ.zóʊɪl.dʒerz]	'soldiers'

In each case, [ɪz] is placed within the first syllable in the word. Thus, the first syllable in *medal*, [mɛ], is infixed to become [mɪ.zɛ]. The full word, [mɪ.zɛ.rəl], is stressed on the penultimate syllable, exactly like (2). Contrast the above examples with the final-stressed words in (4) below:

(4) Non-infixed form has **final** stress:

	Non-infixed		*Infixed*	*Meaning*
a.	[bə.**háɪnd**]	→	[bə.hɪ́.zaɪnd]	'behind'
b.	[ə.**ráʊnd**]	→	[ə.rɪ́.zaʊnd]	'around'
c.	[sə.**práɪz**]	→	[sə.prɪ́.zaɪz]	'surprise'

Again, the infix is placed within the stressed syllable, which is now the second syllable. The final syllable, [haɪnd], becomes [hɪ.zaɪnd]. From (2) - (4) we can see that, regardless of length (one or two syllables) or stress position of the uninfixed form (final or penultimate), the output stress is always penultimate: (…σ)σ́σ.

Thus, *iz*-infixation appears to be directly affected by stress; infixation occurs in the syllable that is stressed in the unaffixed base form of the word. This means that two words differing only in stress should have two different output forms. As we see in (5), this is exactly what happens:

(5)

	Base form		*Infixed Form*	*Meaning*
a.	**dɛ́** vəl	→	dɪ **zɛ́** vəl	'devil'
b.	də **vɪ́l**	→	də **vɪ́** zəl	'(Coupe) de Ville'[4]

In (5a), the syllable [dɛ] gets the infix, while in (5b), the syllable [vɪl] gets the infix. Clearly, the infixation process can only be fully captured with some sort of appeal to stress, namely the stress of the unaffixed form.

[4] *Coupe de Ville* is the name of an automobile.

There are two distinct levels for describing *iz*-infixation. First, each word can be examined in isolation to determine the motivation for where and how *iz*-infixation occurs. Second, *iz*-infixation can be examined within the context of an entire phrase or verse, beyond the word level. This phenomenon has thus far only been examined on the word level. It is useful to view *iz*-infixation at both levels, because both are relevant to the complete picture. In Section 2, I will discuss the basic cases of *iz*-infixation, temporarily limiting the scope of analysis to the word level; I will show that there is a need for correspondence with the unaffixed form, and also suggest a modification to the analysis proposed by Viau (2006) that provides a more complete account for the data. I will then look beyond the word level in Section 3, and show that rhyme and meter can (a) motivate the use of *iz*-infixation due to the prosodic modifications inherent in the process, and (b) motivate cases of *iz*-infixation that cannot be explained through the word-level analysis alone. In Section 3.3, I will look at segmental factors that seem to affect the distribution of *iz*-infixation cases in the corpus, leading to phonological gaps.

2 Position of infix within the word

I will now pursue an analysis of the placement of [ɪz] within words, without regard to phrasal context. I will first relate the markedness constraints that govern the placement of [ɪz] within the syllable, followed by the combination of markedness and output-output correspondence constraints that govern the placement of [ɪz] within the word as a whole.

2.1 Position in the syllable

Assuming that a given syllable is designated for *iz*-infixation, [ɪz] will always be inserted between the onset and rime of that syllable, or as a prefix when no onset exists. The following constraints direct the place within a syllable where the [ɪz] infix will appear.

DEP-IO:	Output segments must have input correspondents.	(DEP-IO ≫ ONSET)
ONSET:	Syllables must have onsets.	
MAX-IO:	Input segments must have output correspondents.	(MAX-IO ≫ NOCODA)
NOCODA:	Syllables are open.	

Here we see a case of The Emergence of The Unmarked (McCarthy 1994) in English: both ONSET and NOCODA play a crucial role in the positioning of the infix. The morpheme /ɪz/ (with a VC shape) finds itself optimally placed where the consonant [z] can resyllabify to become an onset rather than a coda. This means that a landing site between the onset and rime (/strit/ → [strɪzit]) is always the optimal candidate. (In fact, with these constraints alone, attaching [ɪz] as a suffix is equally well-formed; constraints that favor leftward alignment will be introduced shortly). In cases where the syllable lacks an onset, the natural position for the infix will nonetheless be in front of the rime—a prefix.

(6)

/ɪz, strit/	DEP-IO	MAX-IO	ONSET	NO CODA
a. ☞ strɪ.zit				*
b. sɪz.trit				**!

As mentioned in Section 1, all infixed forms have penultimate stress; this suggests that all forms end in a trochaic foot. This pattern is achieved through the following constraints:

FT-BIN:	Feet contain two syllables.
FT-TROCH:	Feet are trochaic.
ALIGN-R(Ft):	The right side of a foot must be aligned with the right side of a morpheme.

These three constraints ensure that stress is penultimate in all infixed words. Thus, the form will always conform to the following pattern: σ (σ́σ).

2.2 Position in the word

The selection of the particular syllable for infixation is complicated by the need for some sort of reference to the unaffixed form of the word. This challenge was addressed by Viau (2006) and independently by Lindsay (2006). Lindsay (2006) suggested allowing information about stress position in a word to be included in the input to *iz*-infixation; however, if we assume that English stress is predictable, this step would require a serial process to derive *iz*-infixation, by first generating the stressed base and then feeding this form into *iz*-infixation to determine the infix position. Such an analysis is not necessary if one instead utilizes Output-Output Correspondence. This approach was taken by Viau (2006) for *iz*-infixation, but does not capture the complete infixation pattern. I will now review Viau's analysis and suggest modifications that are necessary for the infixation pattern to be predicted accurately.

Viau suggests informally that an analysis of Nakanai by McCarthy (2003) can be adapted for *iz*-infixation. He lists the following four constraints:

AFX-TO-HD(IZ):	No segment may separate [IZ] from the head foot.
PREFIX/σ(IZ):	[IZ] may not be preceded by a syllable within the prosodic word.
PREFIX(IZ):	[IZ] may not be preceded by a segment within the prosodic word.
OO-PK-MAX:	If a segment is stressed in the base, it must be stressed in the output.

The PREFIX constraints are similar to an ALIGN-L constraint (such as McCarthy & Prince's (1993) ALIGN-um-L for Tagalog) in that they motivate the infix to be placed as far to the left of the word as possible. OO-PK-MAX refers to the stress of the unaffixed form; however, it does not make the necessary distinction in all cases. A base form with initial stress maintains its stress peak (e.g. *médal* → *mizédal*), but base forms with final stress never do (e.g. *aróund* → *arízound*). AFX-TO-HD(IZ) is a markedness constraint governing the position of [IZ] with respect to the head foot; we see below that it is never violated in any of the mono- or bisyllabic examples. In tableaux (7) and (8), we compare the minimal pair of (a) *devil* and (b) *de Ville*:

(7)

/IZ, dɛvɪl/ O-O=(**dɛ́vəl**)	AFX-TO-HD(IZ)	PREFIX/σ (IZ)	PREFIX (IZ)	OO-PK-MAX
a. ☞ dɪ (zɛ́vəl)			*	
b. də (vɪ́zəl)		*	*!	*

(8)

/IZ, dɛvɪl/ O-O=də(**víl**)	AFX-TO-HD(IZ)	PREFIX/σ (IZ)	PREFIX (IZ)	OO-PK-MAX
a. ☞ dɪ (zɛ́vəl)			*	*
b. ☹ də (vɪ́zəl)		*	*!	*

As we see above, AFX-TO-HD(IZ) is never violated. Further, there are no constraints violated by (7a) or (8a) that are not also violated by (7b) or (8b). This means that there is no configuration possible in which *devizil* comes out on top. In light of this issue, Viau's adaptation of McCarthy's Nakanai analysis necessarily requires an additional constraint, or a modification of the constraints above. Furthermore, we

must either use the base output form, already marked for stress, as the input for the infixation process, or we must continue to use O-O correspondence. In this section, I will use the latter approach.

We will revisit McCarthy's (2002) approach using quantized constraints. I propose an O-O counterpart to AFX-TO-HD(IZ), called OO-AFX-TO-HD(IZ).

(9) **OO-Afx-To-Hd(ɪz):** No segment may separate [ɪz] from the head foot of the unaffixed form.

(10)

i.

/ɪz, dɛvɪl/ O-O=(**dɛ́**vəl)	OO-AFX-TO-HD(IZ)	PREFIX/σ (IZ)
a. ☞ dɪ (zɛ́vəl)		
b. də (vɪ́zəl)		*!

ii.

/ɪz, dɛvɪl/ O-O=də(**vɪ́l**)	OO-AFX-TO-HD(IZ)	PREFIX/σ (IZ)
a. dɪ (zɛ́vəl)	*!	
b. ☞ də (vɪ́zəl)		*

With this constraint, we correctly predict [dəvɪzɪl] as the winner in (ii). The head foot in the base form of [də**vɪ́l**] is [vɪl]; candidate (iia) above violates that constraint because the segment [ɛ] intervenes between [ɪz] and [vɪl]. Note that, unlike the ALIGN-L constraint, this constraint is binary rather than gradient.

The results of this section establish that OO-AFX-TO-HD(ɪz) and PREFIX/σ(ɪz) are the two crucial constraints; OO-PK-MAX is redundant in its predictions and the AFX-TO-HD(ɪz) markedness constraint is not violated in any cases we have seen. This suggests that the positioning of [ɪz] within a word is motivated by two factors: minimizing the distance from the left edge of the word and minimizing the distance from the head foot of the corresponding base form.

3 Factors governing the use of *iz*-infixation

As mentioned earlier, the occurrence of *iz*-infixation is not truly predictable in the grammar, as there is no grammatical circumstance that requires *iz*-infixation. Nonetheless, there is a notable correlation between *iz*-infixation and rhyme, framed by constraints governing the relationship between text and rhythm and the constraints on well-formedness of the meter. In this section we will see some of the rhythmical environments that "encourage" the use of *iz*-infixation on a certain line or a certain word; I will also show how these metrical constraints are ranked such that they can take precedence over the word-level constraints that we saw in Section 2.

First, let us briefly examine two groups of *iz*-infixed words from the corpus that do not pattern as expected based upon the constraints we currently have at our disposal.

(11)

	Base	*Infixed Form*	*Expected?*	*Meaning*
a.	[**ǽf**.tɚ.mæθ]	[æf.tɚ.**mɪ́**.zæθ]	*[i.zæf.**tɚ́**.mæθ]	'aftermath'
b.	[**ɪ́n**.frə.rɛd]	[ɪn.frə.**rɪ́**.zɛd]	*[ɪ.zɪn.**frə́**.rɛd]	'infrared'
c.	[**fʌ́ŋ**.ki.tawn]	[fʌŋ.ki.**tɪ́**.zawn]	*[fɪ.zʌŋ.**kɪ́**.tawn]	'Funkytown'

When we begin to look at infixation cases that are based on trisyllabic bases, we introduce a conflict that did not exist in smaller forms. We now have the possibility for a conflict between the markedness constraints (which govern the output form) and the O-O correspondence constraints that determine the position of the infixation. In (11a), the base form has stress on the antepenultimate syllable (as well as secondary stress on the final syllable).

The fact that we do not see the "expected" output in (11a) means that there are a number of possible problems. Intuitively, it seems strange that [ɪz] is so far away from the stressed syllable of the output form. In fact, throughout the entire corpus, there is no example of [ɪz] infixation in which [ɪz] is separated from the head foot of the output form. This suggests that another constraint might, in fact, be playing a role: the markedness constraint AFX-TO-HD(IZ). The ranking of this constraint would, then, only become crucial when infixing into trisyllabic bases or higher, as we have here. Another possible

consideration is the fact that each of these examples has secondary stress on the last syllable, leaving the middle syllable as the weakest syllable in each word. The output pattern may also be affected by a motivation not to stress a syllable that is unstressed in the base form. Later in the section, we will see that metrical constraints play a role in the output form of these words, and these constraints mask any would-be effects that an AFX-TO-HD(IZ) constraint might have.

There are also infixation cases in the corpus that simply do not exhibit the expected pattern. The most significant departure from the pattern occurs in certain cases of words that have a bisyllabic base. We have established that [ɪz] is attracted to the stressed syllable of the base, but the corpus also includes such forms as the following:

(12)		*Base*	*Infixed*	*Expected Infix*	*Meaning*
	a.	[**gʌ́n**.plej]	[gʌn.**plɪ́**.zej]	[gɪ.**zʌ́n**.plej]	'gunplay'
	b.	[**sʌ́**.bəˑb]	[səˑ.**bɪ́**.zəˑb]	[sɪ.**zʌ́**.bəˑb]	'suburb'

Though (12a) is a compound word, note that (12b) clearly is not. If [ɪz] attracts to the stress of the base, then there is no explanation for the infixation in (12), where the location of [ɪz] corresponds to the unstressed syllable from the base form. The explanation for the forms in (11) and (12) lies outside of the word in the context of the verse.

3.1 Metrical Alignment

In this section, we will examine how alignment to the rhythmical pattern of the verse predicts certain prosodic structures to be better-suited than others. To describe this metrical alignment process, I will incorporate two additional frameworks: one for meter and one for poetic rhyme.

Speakers have intuitions about where syllables of text should be aligned in time with a song or rhythmic pattern; this process is known as *textsetting*. I will utilize grid notation (Liberman 1975, Lerdahl and Jackendoff 1983, Hayes 2005, others) to describe the relative positions of prominence within lines of verse that heavily influence the textsetting process. We can examine the greater metrical structure using the following "metrical principles" outlines by Hayes (2005):

(13) Conflicting Metrical Principles in textsetting:
- **a. matching stress to strong position**
- b. avoidance of long lapses
- c. avoidance of extreme syllable compression
- d. alignment of phonological phrase boundaries with line boundaries

The perception of rhyme is governed by what I am calling, following Zwicky (1976), the "rhyming domain". The rhyming domain of an utterance can be defined as the rime of the syllable with primary stress, along with every segment that follows it. The onset of the stressed syllable is always outside of the domain.

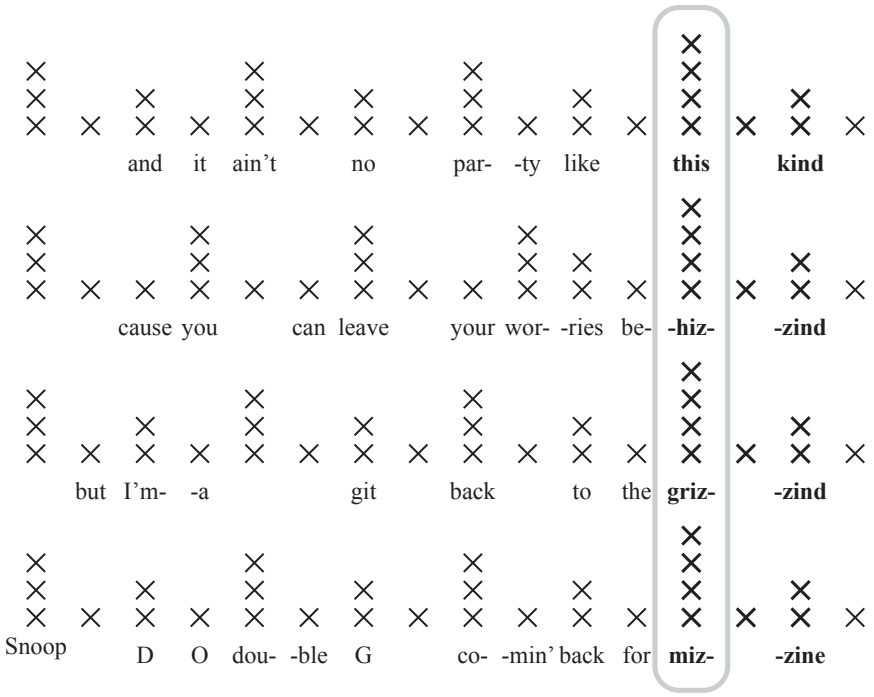
(14) |→ rhyming domain
σσC [**V́**σσσ…]

All segments within the rhyming domain are crucial to the perception of the rhyme, and segments outside of the rhyming domain are not.[5] For example, the rhyming domain of the word *tr**óu**blesome* would be [ʌ.bəl.səm], whereas the rhyming domain of *perceptib**ɪ**lity* is only [ɪ.lɪ.ɾi]. Two words or phrases that are identical in their rhyming domain have a *perfect* rhyme; although many types of *imperfect* rhymes do exist, it is assumed that a speaker will always choose the output that will have as few "imperfections" as possible.

In (15), the syllables with primary stress in each line are circled.

[5] Though not crucial, they might contribute to the overall perception of rhyme.

(15)



In (15), the first line has primary phrasal stress on *this*, which sets the feminine rhyme scheme.[6] This is an ideal environment for *iz*-infixation, because its uniform penultimate stress allows the following three lines to make an imperfect rhyme. In this case, the speaker could have chosen to leave out the infixation entirely, but that would require one of two possibilities (the main phrasal stress is bolded):

(16) a.

par-	ty	like	this	**kind**
your	wor-	ries	be-	**hind**
back		to	the	**grind**
com-	in'	back	for	**mine**[7]

b.

par-	ty	like		**this**	kind
your	wor-	ries	be-	**hind**	
back		to	the	**grind**	
com-	in'	back	for	**mine**	

In (16a), we had to move *this* into an unstressed position and designate *kind* as the syllable with the main stress. This configuration does not allow the speaker to place emphasis on the word *this*, which receives contrastive focus.

Returning to (16b), in this case we restored the first line to its original shape, but it causes an imperfect rhyme, where a stressed syllable is rhymed with unstressed syllable. Both of these structures are inferior to the infixed form, *grizzind* from (15), which we find in the corpus.

3.2 Altering *iz*-infixation to suit a rhyme

In (12a-b), we briefly looked at cases of infixation from the corpus that do not follow the predicted pattern. I will focus on (12b):

[6] A feminine rhyme has penultimate stress (Holtman 1996).

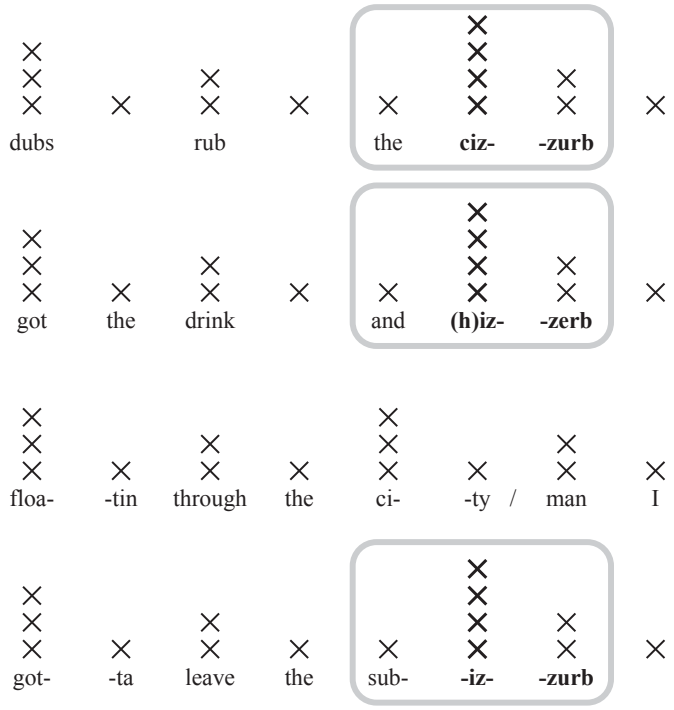
[7] "Mine" is rhyming by assonance, where the nucleus of the stressed syllable matches, but the coda does not. The perceptual similarity of differing segments positively correlates with the structures' rhymability (Zwicky 1976, Kawahara 2007, others), though I will not address this fully here.

(12)

	Base	*Infixed*	*Expected Infix*	*Meaning*
b.	[**sʌ́**.bɚb]	[sə.**bɪ́**.zɚb]	[sɪ.**zʌ́**.bɚb]	‘suburb’

Although [**sʌ́**.bɚb] has penultimate stress, we do not see the predicted output form, [sɪ.**zʌ́**.bɚb], which would correspond with the stress position. Instead, the infixation is in the final (unstressed) syllable, creating [sə.**bɪ́**.zɚb]. When the word *subizzurb* was examined out of context, there was no explanation for this deviation from the previously established infixation pattern. As above, when we consider the greater metrical structure, the infixation becomes clearer.

(17)



In (17), *suburb* is the infixation target in the final line; if we look at the metrical structure, and particularly the poetic rhyme, of the surrounding phrases, we see that there is a motivation to alter the position of the infixation, because the poetic rhyme can take precedence (again, we have an AABA rhyme scheme, so the “B” line will be ignored):

(18)

ðə	kɪ	**zɚb**
ən	ɪ	**zɚb**
…		
sʌ	bɪ	**zɚb**

Without the infixation we end up having two choices that are undesirable:

(19)

a.	ðə	**kɚb**			b.	ðə	**kɚb**
	ən	**ɚb**				ən	**ɚb**
	…					…	
		sʌ	bɚb			sʌ	**bɚb**

In (19a), we put the first syllable of *suburb* into the strong position, which misaligns it with the previous lines (*curb* and *herb*) that each have [ɚb] as the rhyming domain. However, (19b) has its own problems. For the sake of aligning the rhyming domain of *suburb* with the previous lines, we have violated *STRESSLESS IN S ([bɚb] in the strong position) and *STRESS IN W ([sʌ] in the weak position).

Infixation, with its stress-reassignment, provides a better option; in this case, it is necessary to infix into the rhyming domain of all three rhyming lines. This shifts the stress pattern from final stress to penultimate stress on the first two lines, and also creates penultimate stress on the *suburb* line (remember: the output of any infixed mono- or bisyllabic word has penultimate stress). Immediately, we have aligned the [ə·b] syllable of each line, because the stress pattern of *suburb* has changed, regardless of its form. In other words, we no longer violate *STRESS IN W in the final line because we have changed the fundamental stress of the word through infixation.

However, the first two lines are perfect rhymes, which means that there is a strong motivation for a perfect rhyme on the final line. This motivation is stronger than the motivation to align [ɪz] with the stressed syllable (namely PREFIX/σ(ɪz) in this case). This means that [ɪz] is inserted into the unstressed syllable *in this particular metrical context*, rather than the stressed (and furthest left) syllable.

We can postulate the following constraint as a prototype to deal with this rhyming context:

ALIGN-RHYME-DOMAIN: The rhyming domains of a rhyming verse must be identical.

(20) *iz*-infixation with metrical influence included:

/ɪz, sʌbə·b/ O-O=(**sʌ́**bə·b) **Rhyming domain**=ɪ.zə·b		ALIGN-RHYME-DOMAIN	OO-AFX-TO-HD(IZ)	PREFIX /σ (IZ)
a.	sɪ (zʌ́bə·b)	*!		
b. ☞	sə (bɪ́zə·b)			*!

Clearly, the prediction from (20) is that, outside of this particular metrical context, a word like *suburb* would follow the expected stress pattern (i.e. *sizuburb*).[8]

What we do not see here, or elsewhere in the corpus, is a case where the rhyme or metrical structure causes the infixation to occur in a different position *within a given syllable*. The constraints that require *iz*-infixation to occur between onset and rime within a syllable outrank all other constraints under consideration here.

The same properties of metrics and rhyme that were used to account for *subizzurb* can also be used to account for the unexpected pattern in trisyllabic bases, such as those shown in (11).

The infixed word *funkytizown* (base form: *funkytown*) would have been impossible to fully account for using the O-O constraints in the word-level analysis (Section 2). Rather than consider the word-level constraints that may be in play, we can now try to use the alignment and rhyme tools to predict the output form.

(21) and everyone wanted to **cl<u>iz</u>own**
bound for funky**t<u>iz</u>own**
and everywhere that this cat went
like the Rock, he layed the **smack down**

The crucial words in each line are bolded in (21). Each of the bolded words contributes to an imperfect feminine rhyme scheme. Both *clizown* and *funkytizown* are infixed such that the stress pattern will match *smackdown*.

[8] There may be other contexts that might also cause this *suburb*-style infixation shift, but I would predict that any such circumstances would also be on the metrical level, as we see here, rather than anything internal to the word itself.

(22) a. *iz*-infixation*: proper alignment*

to	**cli-**	**-zown**	(A)
-ky-	**-ti-**	**-zown**	(A)
…			(B)
the	**smack**	**-down**	(A)

b. *No infixation: *Stressless in S violation*

to	**clown**		(A)	
-ky-	**-town**		(A)	(Unstressed syllable in Strong position)
…			(B)	
the	**smack**	**-down**	(A)	(Does not align with the first two lines)

c. *No infixation: *Fill Extra Weak violation*

to	**cli-**	**-zown**	(A)	
	fun-	-ky- town	(A)	(Extra-weak syllable must be filled!)
…			(B)	
the	**smack**	**-down**	(A)	

Focusing in on the key words, we can see that the infixation is necessary in order for the rhyming domains to align properly. The word *funkytown* has antepenultimate stress (and final secondary stress). Even if it were permissible on the word-level to add [ɪz] infixation to the stressed syllable of this word (creating *fizunkytown*), the constraints governing metrical alignment would not allow it.

In (22a), we have the actual verse, which also follows an AABA rhyme scheme. We can see that the three rhyming partners form an imperfect rhyme. (22b) shows a possible version of the verse, where infixation is not used. We can see that *clown* and *-town* are not aligned with *-down*; we also are required to place the syllable *-town* in a Strong position, even though it is not a stressed syllable, which violates *STRESSLESS IN S.

If we rearrange the alignment of *funkytown* in order to satisfy *STRESSLESS IN S, this results in a form like (22c). If the stressed syllable *fun-* (the antepenultimate syllable) is aligned with the main stress, and the structure is a feminine rhyme scheme (penultimate stress), then we are forced to squeeze the three syllables of *funkytown* into the space of two slots. This is possible, as there are always extra-weak positions available; use of them, however, is a violation of *FILL EXTRA WEAK, which is the most highly ranked constraint of all. This is inferior to (22b), and certainly far inferior to the [ɪz]-infixed *funkytizown*.

Finally, we can see that other potential output forms for *funkytown* are not possible in light of the context of the verse; if *funkytown* were infixed as *fizúnkytown*[9] then we would run into the same stress/strong position alignment difficulties that we saw in (22b-c).

3.3 Segmental factors

The phenomenon of *iz*-infixation seems to have a great deal of freedom in terms of when it can occur; most, if not all, syntactic categories can undergo infixation (even function words like *thizzan* ('than') or pronouns like *yizoo* ('you') exist in the corpus.[10]) Furthermore, in all cases we have seen so far, the phonological pattern is quite regular: every word has one infixed counterpart and there has been no prosodic environment that has changed an output form in any irregular way.

In other languages that exhibit infixation, various phonotactic restrictions at a potential infixation site cause a change in the form of the infix or the infixed word, or cause gaps. In the *iz*-infixation corpus, nearly all grammatical English onset clusters are represented, regardless of complexity.

[9] This also, of course, requires us to temporarily ignore the constraints governing the output form of infixed words so that they always have penultimate stress.

[10] The relative *proportions* of [ɪz]-infixed function words in the [ɪz] corpus are almost certainly completely different from the *proportions* represented in the full (i.e. general) corpus; however, it is doubtful that this is impacted by English syntax or phonology.

To confirm this observed evidence, the phonotactic distribution of the full hip-hop corpus was analyzed and compared to the *iz*-infixed subset. In many respects, the phonotactic distribution of *iz*-infixed words seems to generally match that of the full hip-hop corpus.

In general, *iz*-infixation seems to be able to occur in any word at any time in a regular fashion; the data above are consistent with this notion. However, there are a few exceptions that are worth exploring. In this section, we will be looking at cases of a few phonotactically-motivated gaps, as well as seemingly unpredictable behavior that arises in longer words.

3.3.1 [Cj] Gap

There is evidence of a gap in would-be infixation cases where the base form of the word is of the shape [C(C)ju…]. The structure of onset+/ju/ words in English has attracted attention (Davis & Hammond (1995), Barlow (1996), Barlow (2001), Yip (2003), and others), in the context of the Pig Latin language game; the nature of *iz*-infixation has a great deal in common with Pig Latin.

In Pig Latin, a word is converted into its Pig Latin counterpart by removing the entire word-initial onset and creating a new syllable at the end of the word, ending in [eɪ], with the previously removed cluster as its onset. Thus, *car* becomes [ar.keɪ], *plant* becomes [ænt.pleɪ], and *crowded* becomes [aʊ.dəd.kreɪ]. Like *iz*-infixation, this process does not interrupt the integrity of an onset cluster. However, there is one exception that causes variable behavior, namely onset-glide clusters (words beginning with [Cj]). In these cases, the speaker potentially encounters a grammatical dilemma: in English, [Cj] is only allowed under certain conditions when followed by [u] (e.g. *huge*, *fuse*, *volume*). This cluster does not occur in English when [eɪ] is the nucleus; it is simply ungrammatical. This means that if a speaker processes /Cj/ as a complex onset in the usual way, the Pig Latin form of such a word would be ungrammatical without modification, because it would take the form *[-Cjeɪ].

Speakers do indeed avoid producing the ungrammatical *[-Cjeɪ], instead producing one of two possible forms (normally without variation for a given speaker). One group produces Pig-Latin *cute* as [ut.keɪ], while the other produces [jut.keɪ].[11] The existence of this speaker variation indicates that English speakers themselves do not interpret /CjV/ sequences in a uniform way.

Barlow (2001) suggests this variation is caused by the crucial ranking of two constraints:

***M/ɪ:**	ɪ must not be parsed as a syllable margin (Prince and Smolensky 1993)
***COMPLEX-NUCLEUS:**	A nucleus must not be complex (from *COMPLEX, Prince and Smolensky 1993)

When *COMPLEX-NUCLEUS is ranked above *M/ɪ, the optimal output is one where /j/ is part of a complex onset cluster [k͡j] (Dialect A); when the ranking of these two constraints is reversed, a [j͡u] nucleus cluster is optimal (Dialect B).[12]

If we follow the attested patterns from Pig Latin, we could postulate two analogous output variants for /Cj/ clusters with the application of *iz*-infixation.

(23) a. Dialect A: [k͡jut] → [kɪzut] (*[kjɪzut] ?)
b. Dialect B: [kj͡ut] → [kɪzjut]

In (23a), if we follow the standard *iz*-infixation pattern, the predicted output would be *[kjɪ.zut], in order to keep [j] out of the nucleus. Much like *[-Cjeɪ] in Pig Latin, the sequence *[Cjɪ] is ungrammatical in English. Taking a cue from Pig Latin, the optimal form is likely to be [kɪzut], as the [j] segment now has no place to go.

[11] It is not surprising that /Cj/ onsets exhibit exceptional behavior that call into question the status of /j/ with respect to the syllable; they exhibit exceptional behavior throughout English grammar. For example, *volume* ([vɔl.jum]) will lose the [j] segment if stress is shifted through suffixation: *voluminous* ([və.lu.mɪ.nʌs]).

[12] Higher-ranked constraints against other vowels in the syllable margin allow for the valid English diphthongs.

In (23b), [j] is accepted as part of the nucleus. As in Pig Latin, this should avoid the *[Cjɪ] problem altogether, giving the form [kɪz.jut]. The difference between this case and Pig Latin is that we end up creating the sequence [zju], which does not occur in American English. This would predict that the British dialect, which is tolerant of [zju] clusters (e.g. [rəzjum] 'resume'), would have no problem with this form; this would indeed be my prediction. It is worth noting that very similar sequences do exist in American English, such as in the word *disuse* [dɪs.jus], and [zju] is readily allowed across word boundaries (e.g. *says you*). Thus, I will not claim at this time that the lack of [zju] sequences in any lexical item in American English assures that they are prohibited. In the corpus, however, we see neither hypothetical dialect from (23a-b); instead, we have a gap. Figure 1 below shows the type distribution of complex word-initial onset clusters in the full corpus compared to the *iz*-corpus.

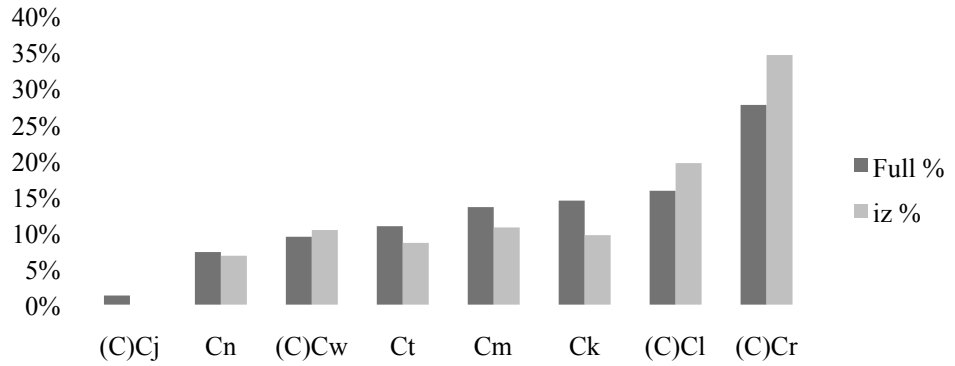


Figure 1 – Type distribution of onsets

[Cj] is much less frequent than other onset clusters in general, but it is totally absent in the *iz*-corpus. In every other cluster represented in Figure 1, the deviation of the *iz*-corpus from the full corpus is less than 10%. The complete lack of [Cj] onset words in the *iz*-corpus seems to suggest a gap, in nearly the same context where Pig Latin speakers produce variable forms (but forms nonetheless). However, it is quite possible that, if prompted, a speaker would come up with an *iz*-infixed form for words that fall into this gap; this would be a worthwhile area for future investigation.

3.3.2 OCP [z] "gap"

There is no instance of *iz*-infixation into a word that begins with a [z] onset in the corpus (e.g. there is no *zizoo*, 'zoo'). This might be caused by an OCP effect, due to the identical [z] segments surrounding the vowel in the first syllable. OCP-place effects in English have been previously attested. Coetzee's (2003) analysis of illegal [skVk] and [spVp] structures (such as **skake* and **spape*) suggested that an OCP effect across the vowel created a bias against these forms. Pierrehumbert et al. (1998) showed evidence of an OCP effect caused by stridents across all intervening segments in a syllable in nonce words (e.g. ***z**an**s*** or ***s**trin**ʃ***). However, there are two things to consider in an OCP-place analysis in the case of *iz*-infixation.

First of all, English does allow [zVz] structures. There are a number of clear cases of [zVz] sequences in English, such as *pizzazz*, as well as the plural forms of most words ending in [z] in the singular, i.e. *loses*, *sneezes*, *arises* ([luzəz], [snizəz], [əraɪzəz]). If these sequences are perfectly acceptable elsewhere in the language, then that means that *iz*-infixation must be dealt with as a special case.

The second factor to consider is that this "gap" only exists for [z] onsets. There are myriad examples in the corpus of [s] and [ʃ] onsets; in fact, [ʃ] and [tʃ] onsets were slightly *more* frequent in the iz-corpus than they were in the full corpus when considering type frequency. Thus, if there is an OCP-place effect, it is a ban on total identity only.

It is very possible, in light of these considerations, that the [z] "gap" is merely accidental, given that [z]-initial words only make up 0.4% of the full corpus. This is another question that might be answered through experimentation.

3.3.3 Underrepresented [ɪz] prefix cases

We observed that [ɪz] attaches as a prefix when the base form has no onset (e.g. *izzask*, 'ask'). Though there are certainly cases of *iz*-prefixation, the percentage in the iz-corpus is much smaller than the full corpus. While 18.6% of words in the full corpus begin with a vowel, only 3.4% of *iz*-words begin with vowels. There is no obvious phonological reason that this would happen. This underrepresentation may be related to the optionality of *iz*-infixation in general; speakers may simply have a preference for using *iz*-infixation when it is truly an infix; that is, speakers may have pragmatic reasons for avoiding this construction, rather than phonological motivations. At the moment, however, this remains unclear.

4 Conclusion

In this paper, I have examined *iz*-infixation on two levels: the word level and the verse (external metrical) level.

At the word level, I showed that the location of *iz*-infixation is fundamentally guided by two conflicting constraints. The infix aligns as close to the left edge of the word as possible in order to satisfy the PREFIX constraint, but will violate that constraint in bisyllabic words with word-final stress, in order to satisfy the higher-ranked OO-AFX-TO-HD(iz) constraint, a modification of the analyses used by Viau (2006) and Lindsay (2006). These constraints operate such that a stress minimal pair will necessarily have different *iz*-infixed forms. The output form of words, on the other hand, is determined in a uniform manner by pure markedness constraints, with virtually no consideration for the stress pattern of the corresponding base form.

At the level of the verse, I used Hayes' (2005) OT analysis of textsetting, combined with rhyme perception (following Zwicky 1976), to show several instances that motivate (though do not grammatical require) *iz*-infixation to occur outright. These motivators govern not only the use or non-use of *iz*-infixation, but the word in a given line in which it should occur.

I also illustrated two cases where these external verse factors supersede word-level constraints, such that closer word-level-only analysis is masked (in the case of the trisyllabic base forms), or word-level constraints are outranked (where the infix selects the unstressed syllable for infixation). In the latter case, this predicts that a given word can potentially have more than one *iz*-infixed counterpart, given the right metrical context; in the future, a more exhaustive corpus might yield more evidence to prove or disprove this prediction.

I addressed some limited segmental factors that seem to affect the use of *iz*-infixation. First, we observed a gap in words with initial consonant-glide clusters, whose anomalous behavior is reminiscent of the anomalous behavior of consonant-glide clusters in the Pig Latin language game in English. However, in Pig Latin, there is variation in output forms rather than a gap; a further experimental investigation into forced *iz*-infixation in [Cj] clusters might produce insight into this discrepancy. Second, I showed that there is a complete gap in [z] onsets in the *iz*-corpus; while this seems likely to be caused by the OCP, segments with similar features did not seem to show any OCP-place effect at all. Lastly, I noted that there is a significant difference in the distribution of vowel-initial words in general compared to the number that undergo *iz*-infixation. If *iz*-infixation is to be taken as, essentially, a prefix that usually surfaces as an infix due to markedness constraints and an attraction to stress, then why should there be an underrepresentation of cases where [ɪz] can surface as a prefix? I hope to answer this question in future research.

5 References

Barlow, Jessica A. 2001. Individual differences in the production of initial consonant sequences in Pig Latin. *Lingua* 111.667-96.

Barlow, Jessica A. 1996. The Development of On-glides in American English. *Proceedings of the 20th Annual Boston University Conference on Language Development*, ed. by A. Stringfellow, D. Cahana-Amitay, E. Hughes & A. Zukowski, 40-51. Somerville, MA: Cascadilla Press.

Broselow, Ellen & John J. McCarthy. 1983. A Theory of Internal Reduplication. *The Linguistic Review* 3.25-88.

Coetzee, A. W. 2005. The Obligatory Contour Principle in the perception of English. *Prosodies: Selected Papers from the Phonetics and Phonology in Iberia Conference*, 2003, Iberia, Spain.
Crowhurst, M. 1998. Um Infixation and Prefixation in Toba Batak. *Language* 74.590-604.
Crowhurst, M. 2001. Coda conditions and um infixation in Toba Batak. *Lingua* 111.561-90.
Davis, S. & M. Hammond. 1995. On the status of onglides in American English. *Phonology* 12.159-82.
Halle, John & Fred Lerdahl. 1993. A generative textsetting model. *Current Musicology* 55.3-23.
Hayes, Bruce. 2005. Textsetting as Constraint Conflict. *Towards a Typology of Poetic Forms*, ed. by J.-L. Aroui & A. Arleo. Amsterdam: Elsevier.
Holtman, Astrid. 1996. A Generative Theory of Rhyme: An Optimality Approach. Utrecht: Universiteit Utrecht.
Kager, René. 1999. *Optimality Theory*. Oxford: Oxford University Press.
Kawahara, S. 2007. Half rhymes in Japanese rap lyrics and knowledge of similarity. *Journal of East Asian Linguistics* 16.113-44.
Kiparsky, Paul. 1973/1981. The role of linguistics in a theory of poetry. *Essays in Modern Stylistics*, ed. by D.C. Freeman, 416: Taylor & Francis.
Klein, T. 2005. Infixation and segmental constraint effects: UM and IN in Tagalog, Chamorro, and Toba Batak. *Lingua* 115.959-95.
Lindsay, Mark. 2006. [ɪz] (and [ɪzn]) infixation in American English hip-hop. Stony Brook University. Unpublished ms.
McCarthy, John J. 2003. OT constraints are categorical. *Phonology* 20.75-138.
McCarthy, John J. & Alan Prince. 1993. Generalized Alignment. *Yearbook of Morphology*, ed. by G. Booij & J. van Marle, 79-153. Dordrecht: Kluwer.
McCarthy, John J. & Alan Prince. 1994. The Emergence of the Unmarked: Optimality in Prosodic Morphology. Paper presented to the North East Linguistics Society, Amherst, MA, 1994.
Pierrehumbert, Janet, Jennifer Hay & Mary Beckman. 1998. Speech perception, wellformedness & lexical frequency. Paper presented at the 6th Conference on Laboratory Phonology, York, England.
Prince, Alan & Paul Smolensky. 1993. *Optimality Theory: Constraint Interaction in Generative Grammar: Technical Report no. 2*. New Brunswick, NJ: Rutgers Center for Cognitive Science, Rutgers University.
Viau, Joshua. 2002. Accounting for –iz Infixation in Rap and Hip-hop Music. Evanston, IL, Unpublished ms.
Viau, Joshua. 2006. Introducing English [iz]-Infixation: Snoop Dogg and bey-[iz]-ond. Paper presented at the LSA Summer Meeting, East Lansing, MI.
Yu, Alan. 2007. *A Natural History of Infixation*. New York: Oxford University Press.
Yu, Alan. 2004. Reduplication in English Homeric Infixation. In K. Moulton and M. Wolf (eds.), *Proceedings of the 34th North East Linguistics Society, Vol. 34* (Amherst: GLSA). 619–33.
Zwicky, Arnold. 1976. Well, this Rock and Roll has Got to Stop. Junior's Head is Hard as a Rock. *Chicago Linguistic Society* 12.676-98.
Yip, Moira. 1999. Reduplication as Alliteration and Rhyme. *Glot international* 4.1-7.

Song References

Chingy, "Madd@Me", Jackpot. CD. Disturbing tha Peace/Capitol Records, 2003.
Nate Dogg w/ Snoop Doggy Dogg, Warren G, "Friends", G-Funk Classics Vol. 1 & 2. CD. Breakaway / Navarre, 1998.
Playa Fly, "N God We Trust", Da Game Owe Me. CD. Super Sigg Records, 1999.
Playa Fly, "Universal Heartthrob", Fly2k. CD. Diamond Records/Minnie Mae Muzik, 2002.
Snoop Dogg, "Tha Doggfather", Tha Doggfather. CD. Interscope Records, 1996.

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Quantifier stranding and reflexive stranding in Mayrinax Atayal*

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The stranding of quantifiers/prepositions is argued to show the path of movement. Mayrinax Atayal, a verb-initial ergative language, displays a wide range of positions for the quantifier *kahabaag* 'all' and the reflexive anaphor *nanaq* 'self' when they are interpreted with absolutive DPs. Assuming stranding phenomena as diagnostics for movement, I investigate quantifier stranding and reflexive stranding in Mayrinax Atayal, and explore the structure of this language. The sentence-final absolutive DP is argued to be singled out in Spec of CP. Before moving to Spec of CP, the absolutive DP passes through Spec of *v*P. The V initial word order is derived from a V to T movement followed by a TP remnant movement. The positions of the quantifier and the reflexive anaphor reflect the movement path of the absolutive DP: base position, the intermediate Spec of *v*P, and Spec of CP.

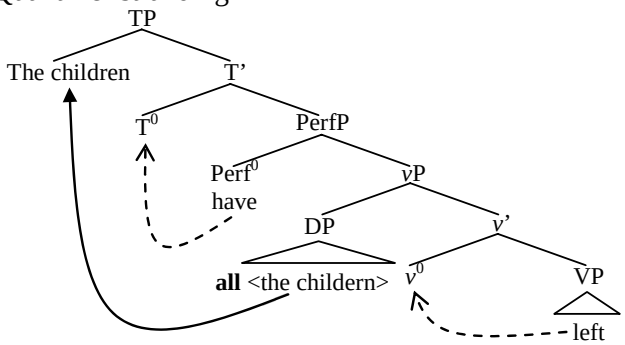
1 Introduction

The stranding of quantifiers/prepositions is argued to show the path of movement (Sportiche 1988, McCloskey 2000, Martin 2003, but see also Dowty & Brodie 1984 and Dowty 1978 for a transformationless approach).[1] Consider the following stranding phenomena in English:

(1) a. *All* the children have _ left.
b. The children have *all* _ left. (McCloskey 2000)
(2) a. Which book$_i$ did they talk [about t_i]?
b. This book$_i$ was talked [about t_i] (Martin 2003)

The sentences in (1) show that the base position of *all the children* is Spec of *v*P; the stranding of *all* shows the path of the movement from Spec of *v*P to Spec of TP. This movement is illustrated by the solid line in (3). The sentences in (2) show that *which book* and *this book* are moved from inside the PPs, as shown in (4).

(3) Quantifier stranding



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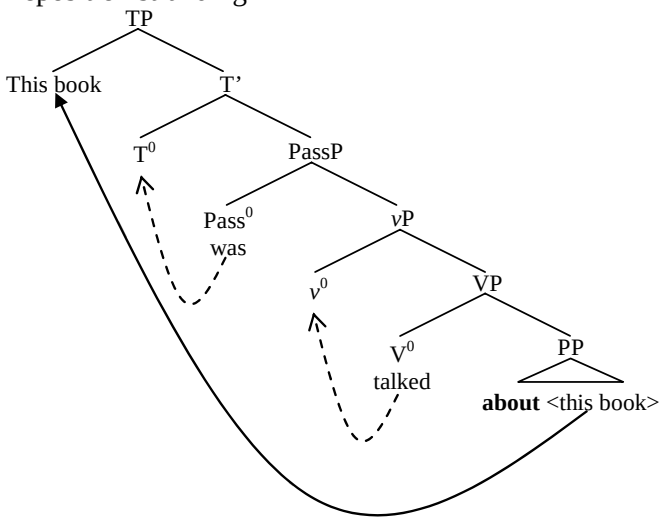
[1] Dowty & Brodie (1984) argue that the determiner *all* and the VP-quantifier *all* are of different logical types, but have equal truth-conditions. The VP-quantifier *all* shows relations between a VP and its argument, including subject, object and indirect object, but not modifiers. This approach is not discussed in this paper since we need at least three positions for the quantifier.

(4) Preposition stranding



Mayrinax Atayal, an Austronesian language, displays a wide range of positions for the quantifier *kahabaag* 'all' and the reflexive anaphor *nanaq* 'self'. In this paper, I will investigate these two stranding phenomena, quantifier stranding (QS) and reflexive stranding (RS). Assuming that stranding phenomena are diagnostics for movement, I will explore the structure of this head-initial ergative language. The rest of this section is a brief introduction of Mayrinax Atayal and the QS/RS data.

Mayrinax is a dialect of Atayalic, which in turn is a sub-branch of Formosan languages (Tryon 1995). It is argued that, along with other Austronesian languages, Mayrinax is an ergative language with verb-ergative-absolutive word order (Huang 1994). The absolutive DP in sentence-final position is generally taken as the subject or topic of the sentence (Guilfoyle, Hung and Travis 1992). The absolutive DP can be any thematic role of the predicate, depending on the voice morphology on the verb.

(5) a. t-um-apiq cu naniqan i Tali
AV-tap OBL table ABS Tali
'Tali taps the table.'

b. buʔ-un ni Tali ku bawak
shoot-PV ERG Tali ABS pig
'The pig is shot by Tali.'

c. t-in-ahuk-an ni Tali ku tahukan
REAL-sit-LOC ERG Tali ABS chair
'Tali was sitting on that chair.'

d. si-ʔuhak ni Yuma cu cajpuʔ i Tali
BV-pull ERG Yuma OBL radish ABS Tali
'Yuma pulled out the radish for Tali.'

When the verb takes agent voice (AV) morphology *-um-*, as in (5a), the agent, *Tali*, occupies the sentence final position. When the verb takes patient voice (PV) *-un*, as in (5b) the patient/theme occupies the sentence-final position. In (5c), the location occupies that position, signaled by the locative voice (LV) morphology, *-an*. (5d) is a beneficiary voice sentence with the beneficiary role in sentence-final position. The examples in this paper are all in PV unless marked otherwise.

The quantifier *kahabaag* 'all' can occur in various positions without changing the meaning. Consider the following data:[2]

[2] In contrast, other quantifiers do not behave the same way. Numbers, *tikaj* 'some', and *pajuh* 'many' do not strand.

a. bahq-an ni Buyung cuhisa ku ʔusaiŋ ka sjatu
wash-LV ERG Buyung yesterday ABS two LINKER clothes
'Buyung washed two clothes.'

(6) a. tutiŋ-un ni sinse cuhisa *kahabaag* ku papatas
hit-PV ERG teacher yesterday all ABS student
b. tutiŋ-un ni sinse *kahabaag* cuhisa ku papatas
hit-PV ERG teacher all yesterday ABS student
c. tutiŋ-un *kahabaag* ni sinse cuhisa ku papatas
hit-PV all ERG teacher yesterday ABS student
'The teacher hit all the students yesterday.'

The quantifier is not just an adjunct and does not have to be bound by the subject/absolutive DP. It can also be interpreted with the ergative DP. When the quantifier is interpreted with the ergative DP, it can occur only in one position.

(7) a. tutiŋ-un *kahabaag* nku sinse cuhisa ku papatas
hit-PV all ERG teacher yesterday ABS student
b. *tutiŋ-un nku sinse *kahabaag* cuhisa ku papatas
hit-PV ERG teacher all yesterday ABS student
'All the teachers hit the student'
c. *tutiŋ-un nku sinse cuhisa *kahabaag* ku papatas
hit-PV ERG teacher yesterday all ABS student
'All the teachers hit the student'

The reflexive *nanaq* 'self', on the other hand, can occur in various positions. These positions coincide with the stranding positions of *kahabaag* 'all'. Consider the following data:[3]

(8) a. ʔtutiŋ-un ni Buyung cuhisa i hija *nanaq*
hit-PV ERG Buyung yesterday ABS he self
b. tutiŋ-un ni Buyung *nanaq* cuhisa i hija
hit-PV ERG Buyung self yesterday ABS he
c. tutiŋ-un *nanaq* ni Buyung cuhisa i hija
hit-PV self ERG Buyung yesterday ABS he
'Buyung hit himself.'

Nanaq, however, can also mean 'alone'. In that case, the distribution is freer. Consider the following data:

(9) a. ma-bahuq cu sjatu nanaq i Buyung
AV-wash OBL clothes alone ABS Buyung
'Buyung washed the clothes by himself/alone'

---

b. *bahq-an ni Buyung ʔusaiŋ cuhisa ku sjatu
wash-LV ERG Buyung two yesterday ABS clothes
c. bahq-an ni Buyung cuhisa ku tikaj ka sjatu
wash-LV ERG Buyung yesterday ABS some LINKER clothes
'Buyung washed some clothes.'
d. *bahq-an ni Buyung tikaj cuhisa ku sjatu
wash-LV ERG Buyung some yesterday ABS clothes
e. bahq-an ni Buyung cuhisa ku pajuh ka sjatu
wash-LV ERG Buyung yesterday ABS many LINKER clothes
'Buyung washed a lot of clothes.'
f. *bahq-an ni Buyung pajuh cuhisa ku sjatu
wash-LV ERG Buyung many yesterday ABS clothes

[3] A question mark is given to (8a) because it shows a grammatical placement of *nanaq* but not a preferred one. The downgrading of grammaticality will not be discussed in this paper.

b.	ma-bahuq	cu	sjatu	i	Buyung	nanaq	
	AV-wash	OBL	clothes	ABS	Buyung	alone	
c.	Buyung	nanaq	ga	ma-bahuq	cu	sjatu	
	Buyung	alone	TOP	AV-wash	OBL	clothes	

Nanaq meaning ‘alone’ can occur in sentence final position without causing any downgrading of grammaticality, as in (9b), and can also be topicalized, which is impossible for *nanaq* meaning ‘self’, as in (9c).

The paper is organized as follows. Section 2 is a review of the previous attempts to deal with head-initial ergative languages including right-branching IP/TP, VP movement, and TP remnant movement. I will examine these attempts with the QS and RS data in Mayrinax Atayal in section 3 and propose a structure for Mayrinax. Section 4 is a conclusion.

2 Previous analyses

I will review the basic operations from three previous analyses of how to derive verb-initial word order. These analyses are Guilfoyle, Hung and Travis’s (1992) (hereafter GHT 1992) right-branching IP/TP approach, Massam’s (2000) VP movement approach, and Aldridge’s (2004) remnant TP movement approach. I will further examine these structures with the QS and RS data in Mayrinax in section 3, and I will conclude that the structure of Mayrinax should be an Aldridge-type structure.

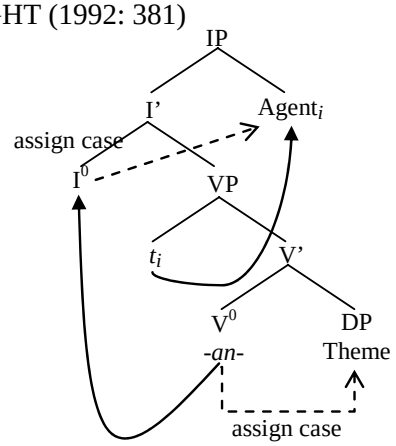
2.1 Guilfoyle, Hung and Travis (1992)

GHT (1992) propose a right-branching Spec of IP/TP for the absolutive-/subject-final word order. Consider the following two sentences from Malagasy, for example:

(10)	a.	M-an-sasa	ny	lamba	amin’	ny	savony	ny	zazavavy
		AV[4]-wash	the	clothes	with	the	soap	the	girl
		‘The girl washes the clothes with the soap.’							
	b.	Sasa-na	ny	zazavavy	amin’	ny	savony	ny	lamba
		wash-PV	the	girl	with	the	soap	the	clothes
		‘The clothes are washed with the soap by the girl.’							

The special morphology, AV marker *-an-*, in (10a) indicates that the agent occupies the sentence-final position. GHT argues that the morpheme *-an-* on V^0 assigns case to the theme, and since the agent is not case-marked in the Spec of VP, it is forced to move to the Spec of IP/TP where it is assigned case via Spec-Head Agreement with I^0, as in (11).

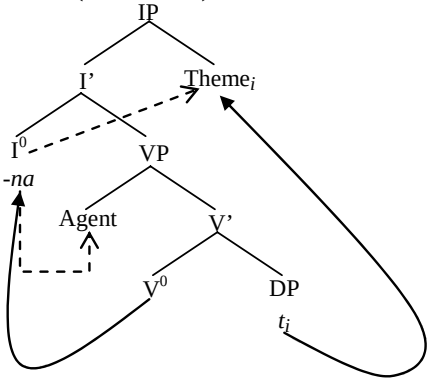
(11) GHT (1992: 381)



[4] GHT (1992) term it as Agent Topic (AT). For consistency, I use Agent Voice (AV) through out for AT and Patient Voice (PV) for Theme Topic (TT).

As for (10b), the morpheme *-na* indicates that Theme occupies the sentence-final position. Hung (1988) claims that *-na* assigns case to the Agent in the Spec of VP from I^0 position. The Theme is not assigned case and is forced to move to the Spec of IP/TP, as in (12).

(12) GHT (1992: 381)

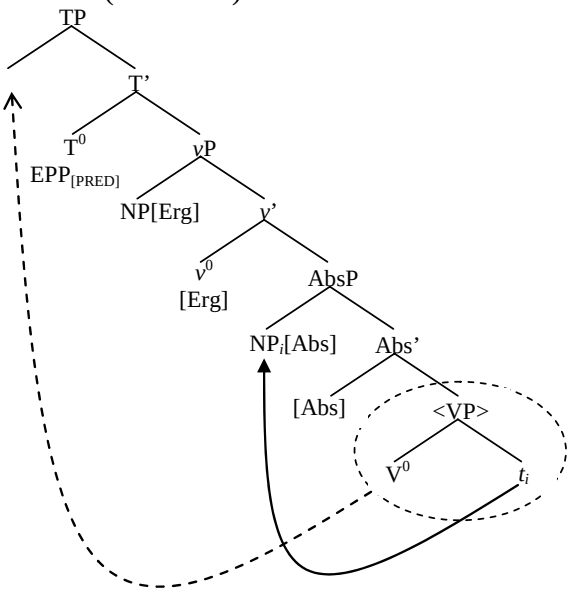


This model is very straightforward. However, I will show that the movement of the theme in Mayrinax seems to be more complicated than this by using QS and RS data.

2.2 Massam (2000)

Massam (2000) proposes a VP movement to deal with verb-initial languages.[5] The motivation of moving VPs is a [PRED] feature on I^0/T^0 (as opposed to [D]) that needs to be checked. An AbsP (or an AgrO) above VP first moves out the Theme DP from VP (to check the absolutive case), and then the [PRED] feature on I^0/T^0 moves out the remnant VP to derive verb-initial word order. Consider the following tree structure:

(13) Massam (2000: 108)



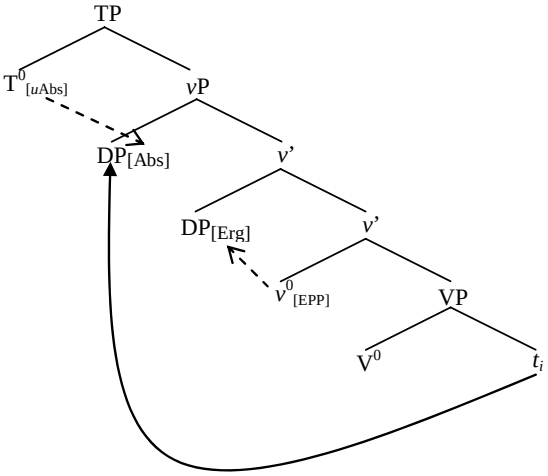
This analysis expands the width of EPP feature on T^0 (EPP[D] and EPP[PRED]) and provides a unified account for the different word orders that Massam discusses. However, I will show in section 3 that it does not explain the Mayrinax data.

[5] She also proposes the same approach for VSO languages. The difference between VSO and VOS is that the former involves noun incorporation and the latter does not,

2.3 Aldridge (2004)

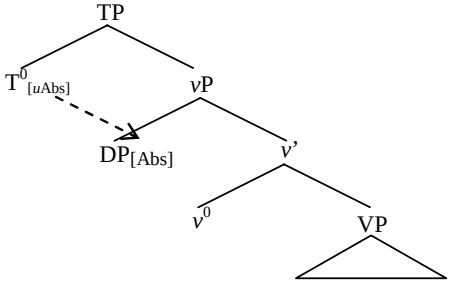
In Aldridge's model, ergative case is inherent and assigned by v^0 while T^0 checks Absolutive case. The ergative DP is merged in a position closer to T^0 than the absolutive DP. In order to establish a probe-goal relation between T^0 and the absolutive DP, $DP_{[Abs]}$ must move to the edge of *v*P higher than $DP_{[Erg]}$. This suggests *v*P is a phase because the Spec of *v*P provides an escape hatch for the absolutive DP for further movement. Aldridge proposes that v^0 hosts an EPP feature in the sense of Chomsky 2001 when the verb is transitive.

(14) Aldridge (2004: 7)



For intransitives, the structural ergative case is not available. v^0 does not have an EPP feature, so the DP merged in the Spec of v^0 is now the goal of the absolutive case probing from T^0.

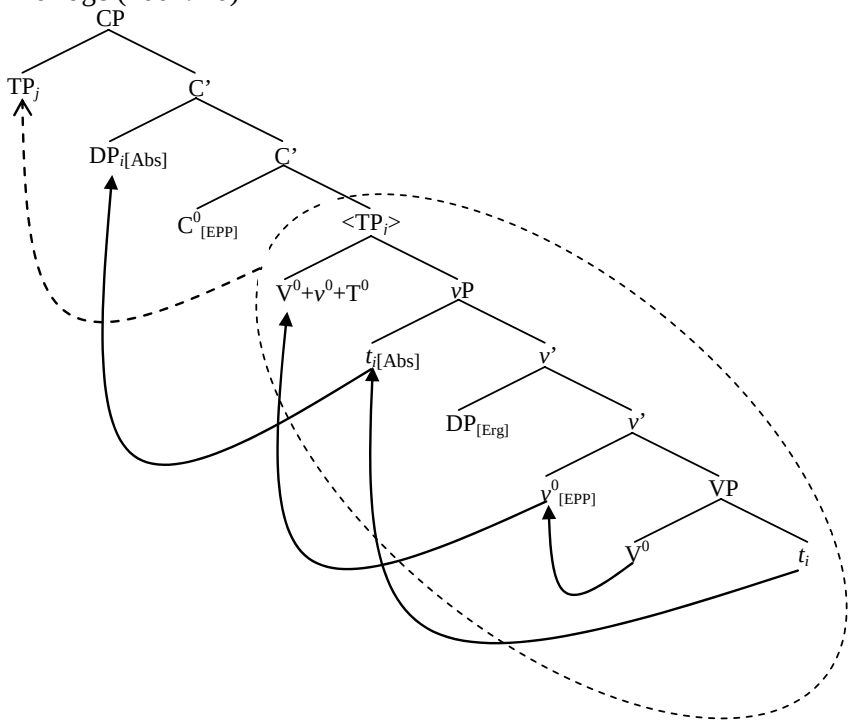
(15) Aldridge (2004: 5)



The derivation of the word order in Aldridge's model is, first of all, that verbs move to T^0 to pick up tense morphology.[6] The absolutive-final word order is derived by moving the $DP_{[Abs]}$ to a topic position above TP, via the EPP feature on C^0. Aldridge adopts and modifies the predicate-fronting analyses proposed by Rackowski (1998), Rackowski & Travis (2000), and Pearson (2001), and proposes that the remnant TP is fronted to derive verb-initial word order.

[6] In Aldridge's model, there is an AspP below TP. I will omit this projection here.

(16) Aldridge (2004: 10)



The TP-movement proposed by Aldridge is not driven by morphological/syntactic features, but by a PF constraint that a DP cannot be spelled out in the leftmost position in a phase edge. The topicalized $DP_{[Abs]}$ would have been at the leftmost position and violated the PF constraint if the closest non-DP XP (which is TP) were not fronted and merged with the CP.

(17) Stranded DP Constraint (Aldridge 2004: 10)
A DP cannot be spelled out in the leftmost position in a phase edge.

3 Mayrinax QS and RS

I will examine these approaches with the QS and RS data in Mayrinax. Before we go into the positions of QS and RS, two questions need to be discussed. First, where should the sentence-final DP go? Second, what is the internal order of the DPs with the quantifier *kahabaag* and the reflexive *nanaq*?

3.1 Sentence-final DP

For the first question, on the one hand, as Massam (2000) suggests, the sentence-final DP should locate under *v*P. On the other hand, as GHT (1992) and Aldridge (2004) suggest, the sentence-final DP should be singled out either in Spec of TP or Spec of CP. GHT show that the sentence-final DP shares some subject-like properties and propose that it is located in Spec of TP. Aldridge shows that the sentence-final DP is located in Spec of CP.

The data below suggest that the absolutive DP in Mayrinax should be singled out in a higher position as well. First of all, the sentence-final DPs cannot be scrambled while others can.

(18)	a.	tutiŋ-un	ni	Buyung	na	kahuj	i	Tali
		hit-PV	ERG	Buyung	INS	woodstick	ABS	Tali
	b.	tutiŋ-un	na	kahuj	ni	Buyung	i	Tali
		hit-PV	INS	woodstick	ERG	Buyung	ABS	Tali
	c.	*tutiŋ-un	i	Tali	ni	Buyung	na	kahuj
		hit-PV	ABS	Tali	ERG	Buyung	INS	woodstick

d. *tutiŋ-un ni Buyung i Tali na kahuj
hit-PV ERG Buyung ABS Tali INS woodstick
'Buyung hit Tali with a woodstick.'

(18a,b) show that the ergative DP and the instrumental DP can be scrambled. Absolutive DPs, on the other hand, cannot be scrambled, as in (18c,d). In Massam's structure, we are not able to explain why absolutive DPs behave differently since all DPs are stacked up below *v*P.

Second, sentence-final DPs can be topicalized. Ergative DPs, too, can be in Topic position; however, the appearance of a resumptive pronoun suggests that ergative DPs as Topic does not involve movement.[7]

(19) a. tutiŋ-un ni Buyung i Tali
hit-PV ERG Buyung ABS Tali
'Buyung hit Tali.'

b. Tali ga tutiŋ-un ni Buyung
Tali TOP hit-PV ERG Buyung
'As for Tali, Buyung hit him.'

c. Buyung ga tutiŋ-un=[8]*nja* i Tali
Buyung TOP hit-PV=3S.ERG ABS Tali
'As for Buyung, he hit Tali.'

d. *Buyung ga tutiŋ-un i Tali
Buyung TOP hit-PV ABS Tali

(19d) shows that, without the resumptive pronoun, the ergative DP cannot be in Topic position. Absolutive DPs do not have this restriction, as in (19b).[9] Again, if we see absolutive DPs no different from other DPs (all stacked up under *v*P), we should not have the difference displayed in (19).

Third, just as with the topicalization data above, only absolutive DPs can undergo wh-movement.

(20) a. ima ku[10] ba-baiq-an=si cu ruwas (Huang 1995)
who NOM RED-give-LV=2S.ERG OBL book
'Who will you give a book to?'

b. nanuwan ku b-in-ainaj ni jaja i isu (Huang 1995)
what NOM REALIS-buy ERG mother DAT you
'What was it that Mother bought for you?'

c. nanuwan ku si-pakahuj=su (Huang 1995)
what NOM IV-chop=2S.ERG
'What did you use to chop (wood)?'

d. pa-qaniq=si cu nanuwan (Huang 1995)
IRREALIS-eat=2S.ABS OBL what
'What will you eat?'

---

[7] Only absolutive DPs, ergative DPs and adjuncts (temporal adverbs, for example) can be in topic position. Other DPs cannot be in this position. Consider the following examples:

a. tutiŋ-un ni Buyung na kahuj i Tali
hit-PV ERG Buyung INS woodstick ABS Tali
'Buyung hit Tali with a woodstick.'

b. *kahuj ga tutiŋ-un ni Buyung i Tali
woodstick TOP hit-PV ERG Buyung ABS Tali

[8] '=' stands for cliticization.

[9] See Georgopoulos 1980 for an analysis on gap and resumptive pronoun in Palauan.

[10] Nominative case marker. Huang (1995) assumes that *ku* is a nominative case marker. Tsai (1997) on analyzing another Formosan language, Kavalan, assumes that it is cleft construction where the absolutive DP moves to the initial of the sentence and becomes the predicate of the sentence.

e. *nanuwan ku pa-qaniq=si
what NOM IRREALIS-eat=2S.ABS

f. b-in-as-un ki ima ni Yumin ku ruwas (Huang 1995)
REALIS-sell-PV LOC who ERG Yumin ABS book
'Whom did Yumin sell the book to?'

g. *ima ku b-in-as-un ni Yumin ku ruwas (Huang 1995)
who NOM REALIS-sell- PV ERG Yumin ABS book

If the wh-word does not take absolutive case, as in (20d,f), it stays in situ. Extracting non-absolutive DPs is ungrammatical, as shown in (20e,g).

I have shown that the absolutive DPs have to be singled out in a higher position. As for which position, Spec of CP or Spec of TP, I suggest, along with Aldridge, that it should be in Spec of CP. Supporting evidence comes from high adverbs that define the TP edge. Absolutive DPs always occur after the adverbs.[11]

(21) a. c-um-inbu=cu cu buhut *cuhisa* (Yeh 2007)
AV-hit=1S.ABS OBL squirrel yesterday
'I hit a squirrel yesterday.'

b. c-um-inbu cu buhut *cuhisa* i Yuraw
AV-hit OBL squirrel yesterday ABS Yuraw
'Yuraw hit a squirrel yesterday.'

c. *c-um-inbu *cuhisa* cu buhut i Yuraw
AV-hit yesterday OBL squirrel ABS Yuraw

d. *c-um-inbu cu buhut i Yuraw *cuhisa*
AV-hit OBL squirrel ABS Yuraw yesterday

When the absolutive DP presents itself as a bound pronoun, it cliticizes onto the verb; in this case, the adverb *cuhisa* 'yesterday' occurs in sentence-final position, as in (21a). When the absolutive DP is not a bound morpheme, the adverb occurs right before it, as in (21b). Other positions are not allowed, as in (21c,d). (21) shows that the absolutive DPs are outside of the TP domain.[12]

3.2 Internal order of the DPs with *kahabaag* and *nanaq*

As for the internal order of the DPs with the quantifier *kahabaag* and the reflexive *nanaq*, I will apply three diagnostics. First, topicalization data suggest that the internal order of the DPs with *kahabaag* is [*kahabaag-case.marker-NP*]: when the whole DP with *kahabaag* is topicalized, the order is [*kahabaag-case.marker-NP*].[13] Consider the following data:

(22) DPs with *kahabaag*

a. tutiŋ-un ni sinse *kahabaag* ku papatas
hit-PV ERG teacher all ABS student

b. tutiŋ-un *kahabaag* ni sinse cuhisa ku papatas
hit-PV all ERG teacher yesterday ABS student

[11] Yeh (2007) also notes that some informants allow these adverbs to appear freely between constituents. The informant that I worked with consistently put these adverbs before the sentence-final absolutive DP or in sentence-final position when the absolutive DP is a clitic or is topicalized.

[12] I assume that the temporal adverb is a right-branching TP adjunct.

[13] The quantifier can also be stranded when topicalized.

a. papatas ga tutiŋ-un ni sinse kahabaag
student TOP hit-PV ERG teacher all

b. papatas ga tutiŋ-un kahabaag ni sinse
student TOP hit-PV all ERG teacher
'As for students, the teacher hit all of them.'

c. [*kahabaag* ku papatas] ga tutiŋ-un ni sinse
all ABS student TOP hit-PV ERG teacher
'The teacher hit all the students.'

This diagnostic does not apply to DPs with the reflexive since it is ungrammatical to topicalize those DPs.[14] Consider the following data:

(23) DPs with *nanaq*

a. ?tutiŋ-un ni Buyung i hija *nanaq*[15]
hit-PV ERG Buyung ABS he self

b. tutiŋ-un ni Buyung *nanaq* i hija
hit-PV ERG Buyung self ABS he

c. **nanaq* i hija ga tutiŋ-un ni Buyung
self ABS he TOP hit-PV ERG Buyung

d. *hija *nanaq* ga tutiŋ-un ni Buyung
he self TOP hit-PV ERG Buyung
'Buyung hit himself.'

Ergative DPs are another diagnostic, since they do not involve movement. Consider the following data:

(24) Ergative DPs with *kahabaag*

tutiŋ-un [*kahabaag* nku sinse] i papatas
hit-PV all ERG teacher ABS student
'All the teachers hit the student.'

This suggests that the order should be [*kahabaag-case.marker-NP*]. However, this diagnostic is not available for DPs with *nanaq* since reflexive anaphors do not occur as agent.

Temporal adverbs are the third diagnostic. Recall that such adverbs define the TP edge. Consider the following data:

(25) a. tutiŋ-un ni sinse cuhisa [*kahabaag* ku papatas]
hit-PV ERG teacher yesterday all ABS student
'The teacher hit all the students yesterday.'

b. tutiŋ-un ni Buyung cuhisa [i hija *nanaq*]
hit-PV ERG Buyung yesterday ABS he self
'Buyung hit himself yesterday.'

This diagnostic suggests that the internal order for DPs with the quantifier is, again, [*kahabaag-case.marker-NP*], and for DPs with the reflexive is [*case.marker-NP-nanaq*].[16]

To sum up so far, the sentence-final DP should occupy a higher position in Spec of CP, and the internal order for DPs with the quantifier is [*kahabaag-case.marker-NP*] and with the reflexive [*case.marker-NP-nanaq*].

[14] I argue elsewhere (Lu 2009) that DPs with the reflexive anaphor cannot be topicalized because of binding reasons.

[15] The downgrading of this sentence disappears when the ergative DP is topicalized.

Buyung ga tutiŋ-un=nja i hija nanaq
Buyung TOP hit-PV=3S.ERG ABS he self
'As for Buyung, he hit himself.'

[16] I will not go into the structure of DP in this paper.

3.3 Mayrinax QS and RS

I have argued that the quantifier and reflexive, moving along with the DPs to sentence-final position, are in Spec of CP. Presumably, the quantifier and reflexive in other positions are stranded on the way to that position. The relevant data are repeated as follows:

(26) QS

a.	tutiŋ-un	ni	sinse	cuhisa	*kahabaag*	ku	papatas
	hit-PV	ERG	teacher	yesterday	all	ABS	student
b.	tutiŋ-un	ni	sinse	*kahabaag*	cuhisa	ku	papatas
	hit-PV	ERG	teacher	all	yesterday	ABS	student
c.	tutiŋ-un	*kahabaag*	ni	sinse	cuhisa	ku	papatas
	hit-PV	all	ERG	teacher	yesterday	ABS	student

'The teacher hit all the students yesterday.'

(27) RS

a.	ʔtutiŋ-un	ni	Buyung	cuhisa	i	hija	*nanaq*
	hit-PV	ERG	Buyung	yesterday	ABS	he	self
b.	tutiŋ-un	ni	Buyung	*nanaq*	cuhisa	i	hija
	hit-PV	ERG	Buyung	self	yesterday	ABS	he
c.	tutiŋ-un	*nanaq*	ni	Buyung	cuhisa	i	hija
	hit-PV	self	ERG	Buyung	yesterday	ABS	he

'Buyung hit himself.'

Two positions (except for the sentence-final position, [26a] and [27a]) of the quantifier and the reflexive need to be accounted for. Presumably, one is the base position, and the other is the position that the DP passes through when it moves up to Spec CP. The rightward movement of DPs in GHT's model and VP movement in Massam's model do not predict the distribution of *kahabaag*/*nanaq*. Only two positions are predicted in their models.

To derive V initial word order, I assume a V to T movement with a TP remnant movement (as suggested by Aldridge [2004] and Pearson [2001]). The TP remnant movement is also supported by the sentence-final questions particle *quw*. Assuming that *quw* is located in C, the movements of both the absolutive DP and the remnant TP put the particle in sentence-final position.[17]

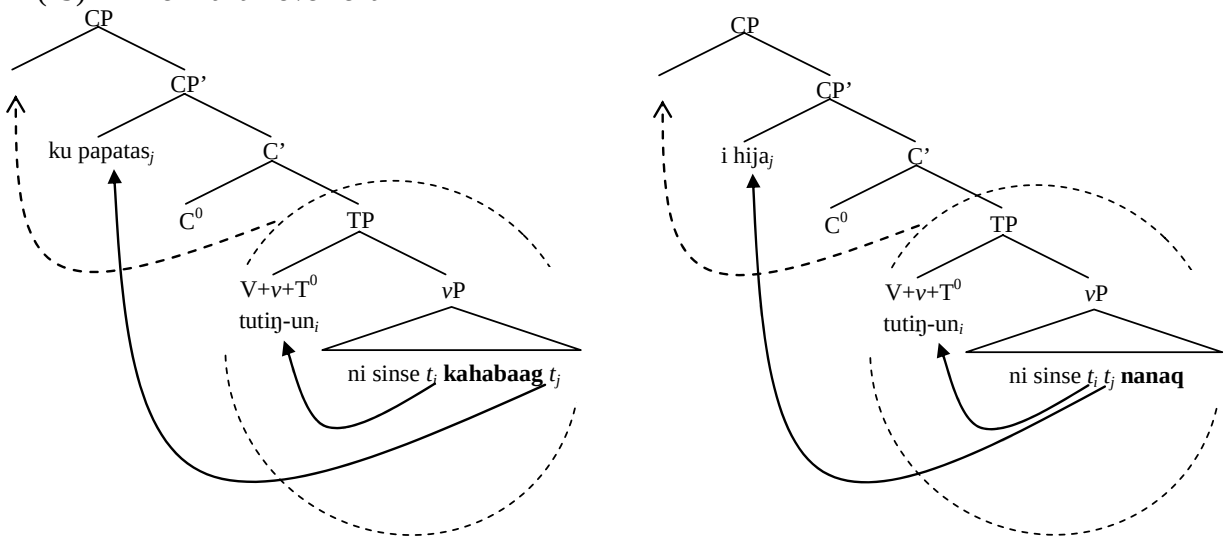
(28) a. ʔal-un ni Yumin ku rahuwal *quw* (Huang 1995: 176)
take-PV ERG Yumin ABS big Q
'Did Yumin take the big one?'

b. ma-qilaap i yaya *quw* (Huang 1995: 176)
AV-sleep ABS mother Q
'Is Mother sleeping?'

We predict that the quantifier/reflexive is stranded in the base position in (26b) and (27b), as shown in the following structure where *kahabaag* and *nanaq* follow the Agents *sinse* and *Buyung*. (Assuming Uniformity of Theta-Assignment Hypothesis, Theme is merged earlier than Agent.)

[17] The position of question particles is used for similar phrasal remnant movement in another Austronesian language, Marshallese. See Willson (2007).

(29) TP remnant movement

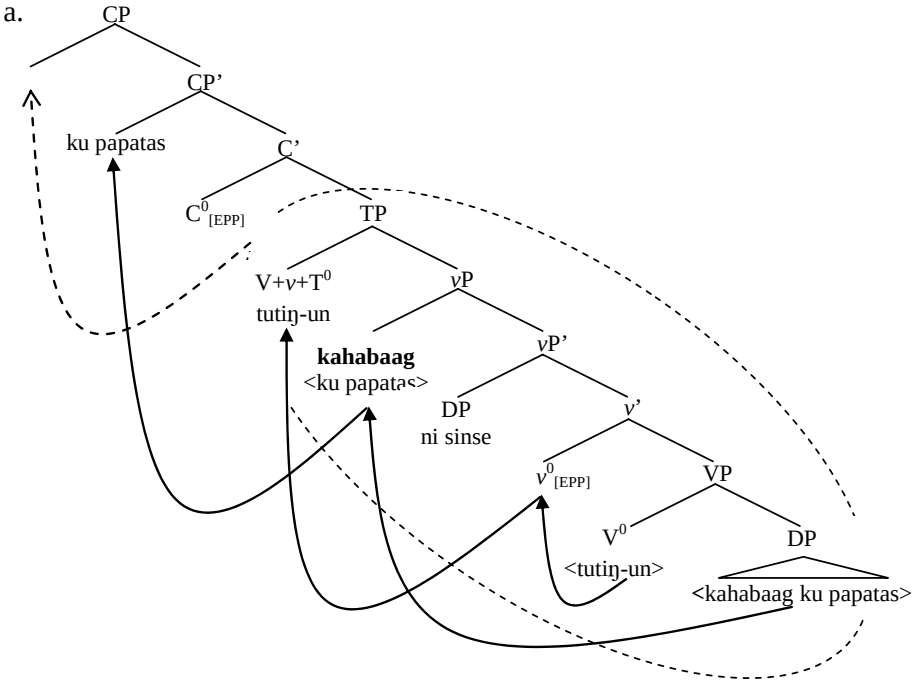


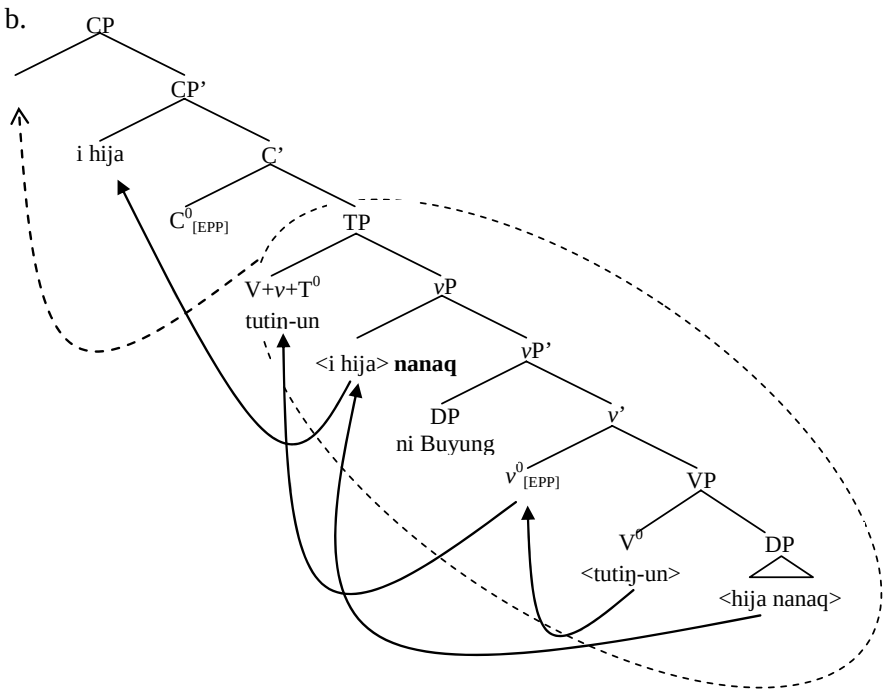
This structure only explains the positions in (26a,b) and (27a,b). It does not yet explain the post-verbal intermediate positions in (26c) and (27c). Also, another puzzle is that, assuming a probe-goal relation between C and the target, it should be the ergative DP that gets probed by C since it is closer to the probe. The ergative DP is higher in the structure (closer to C^0). Moving the absolutive DP across the ergative DP would violate superiority.

Here, I adopt Aldridge's proposal (following Chomsky's [2001] Object Shift analysis) that *v*P is a phase, and the absolutive DP has to move through the edge of *v*P (via EPP feature on v^0) before moving out. By adopting this idea, we can set up the probe-goal relation between C and the absolutive DP, and the post-verbal (before the ergative DP) quantifier position is also explained.

(30) Post-verbal stranding position via TP remnant movement

a.





Assuming that movement is phase-bound, we can explain why wh-movement and topicalization only target absolutive DPs: when a WH feature/TOP feature probes from the CP level, only the absolutive DP is available. Other DPs are closed off before the CP phase (Phase Impenetrability Condition, PIC [Chomsky 2001]). This analysis also coincides with Rackowski and Richards's (2005) proposal in which they show that there is an EPP feature on *v* that pulls up the agreeing DP to the edge of *v*P.[18] Only this DP at the phase edge can undergo further movement.

As for the motivation for the TP remnant movement, the PF constraint that forbids DPs in a phase edge (Aldridge 2004) does not work in Mayrinax since topicalizing or wh-moving a DP to the left edge is allowed. Aldridge suggests that (personal communication) the motivation may be focus. In another Atayalic language, Seediq, the moved TP gets a focus/new information reading.

To summarize, three positions of *kahabaag*/*nanaq* are explained: the sentence-final quantifier/reflexive position is derived by moving the absolutive DP all the way up to Spec of CP without stranding; the position after the ergative DP is when *kahabaag* and *nanaq* are stranded in the base position; the post-verbal position is an intermediate Spec of *v*P position.

4 Conclusion

In this paper, I began with the observation that the quantifier *kahabaag* 'all' and the reflexive *nanaq* 'self' surface in three positions: (i) with their sentence-final absolutive argument, (ii) in a post-verbal position, and (iii) following the ergative argument. I showed data from scrambling, topicalization and wh-movement that suggest that the previously proposed VP movement (Massam 2000) and right-branching IP/TP (GHT 1992) cannot explain all of these positions. Rather the data support a derivation whereby an absolutive DP moves to a higher Spec of CP position via an intermediate Spec of *v*P position, followed by remnant TP movement. Position (i) is derived when the *kahabaag* and *nanaq* move with the absolutive DP all the way to Spec of CP; position (ii) is derived when they are stranded in their base position, and position (iii) is derived when they are stranded in the intermediate Spec of *v*P position.

[18] They support the argument by providing comparison of Tagalog and Germanic languages with object shift. The movement of DP to the *v*P edge is driven by EPP feature on *v* for the correct semantic interpretation. .

References

Aldridge, Edith. 2004. *Ergativity and Word Order in Austronesian Languages*. Dissertation, Cornell University.

Chomsky, Noam. 2001. Derivation by Phase. In Kenstowicz, ed., *Ken Hale: A Life in Language*, 1-52. Cambridge, MA: MIT Press.

Dowty, David & Belinda Brodie. 1984. The semantics of "floated" quantifiers in a transformationless grammar. Proceedings of the West Coast Conference on Formal Linguistics, v3.

Georgopoulos, Carol. 1985. Variables in Palauan Syntax. *Natural Language and Linguistic Theory* 3: 59-94.

Guilfoyle, Eithne, Henrietta Hung & Lisa Travis. 1992. Spec of IP and Spec of VP: two subjects in Austronesian languages. *Natural Language and Linguistic Theory* 10: 375-414.

Huang, Lillian M. 1994. Ergativity in Atayal. *Oceanic Linguistics* 33.1: 129-143.

Huang, Lillian M. 1995. *A Study of Mayrinax Syntax.* Taipei: The Crane Publishing Co.

Hung, Henriette. 1988. *Derived Verbs and Nominals in Malagasy*. Ms. McGill University.

Lu, Yu-an. 2009. Quantifier stranding and reflexive stranding in Mayrinax Atayal. Ms. Stony Brook University.

Martin, Andy. 2003. Constraints on preposition stranding in English. Ms. UCLA.

Massam, Diane. 2000. VSO and VOS: Aspects of Niuean word order. In *The Syntax of Verb Initial Languages*, Andrew Carnie & Eithne Guilfoyle (eds.), pp. 97-116.

McCloskey, James. 2000. Quantifier Float and Wh-Movement in an Irish English. *Linguistic Inquiry* 31.1: 57-84.

Pearson, Joel Matthew. 2001. *The Clause Structure of Malagasy: A Minimalist Approach*. Dissertation, UCLA.

Rackowski, Andrea. 1998. Malagasy Adverbs. In I. Paul, ed., *The Structure of Malagasy*, vol. 2, 11-33. UCLA.

Rackowski, Andrea and Lisa Travis. 2000. V-initial Languages: X or XP Movement and Adverbial Placement. In A. Carnie and E. Guilfoyle, eds., *The Syntax of Verb Initial Languages*, 117-142. Oxford University Press.

Rackowski, Andrea & Norvin Richards. 2005. Phase edge and extraction: a Tagalog case study. *Linguistic Inquiry* 36.4: 565-599.

Sportiche, Dominique. 1988. A theory of floating quantifiers and its corollaries for constituent structure. *Linguistics Inquiry* 19:425-49.

Tryon, Darrell. 1995. The Austronesian languages. In *Comparative Austronesian dictionary: an introduction to Austronesian studies. Part 1: Fascicle 1*, ed. Darrell T. Tryon, 5-44. Berlin/New York: de Gruyter.

Tsai, Wei-Tien Dylan. 1997. Indefinite WH construals in Taiwan Austronesians—A comparative study on Kavalan, Tsou, and Seediq, *Tsing Hua Journal of Chinese Studies* 27.4: 381-422.

Willson, Heather. 2007. Remnant movement and the position of the Marshallese question particle. *5th Asian Glow Proceedings*.

Yeh, Shih-chi Stella. 2007. Temporal expressions in Mayrinax Atayal. Ms. National Tsing Hua University, Taiwan.

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Confirmation questions

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In this study, I report the syntactic taxonomy of *confirmation questions* from a random selection of 40 conversations in the CallHome Corpus of American English (Linguistics Data Consortium 1997), with the aim of offering a unified treatment of *biased* questions . I argue that confirmation questions evaluate the status of a given proposition within the Common Ground, by asking *?p/?~p* to confirm that *p/~p,* respectively, is non-controversially in the Common Ground. I also discuss the ambiguity of the bias of negative interrogatives and demonstrate that Ladd's (1981) *Inner/Outer negation* distinction follows from distinct discourse functions of negative interrogatives.

1 Introduction

This study draws a syntactic taxonomy of *confirmation questions* from a random selection of 40 conversations in the CallHome Corpus of American English (Linguistics Data Consortium 1997). I treat confirmation questions as a subset of the more general notion of biased questions, which are questions that express the speaker's expectation towards a particular answer. The goal of this study is to lay the groundwork for a larger project concerned with (a) the interaction of prosody and syntax of biased questions, and (b) developing a formal semantic account of bias. In this paper, I address some discourse properties of confirmation questions, and suggest that for each different syntactic type of confirmation question, there is a distinct pragmatic function.

This paper is organized as follows. In §2, I will motivate the pragmatic contrast between *information* and *confirmation* questions. In §3, I will report my findings of the syntax of confirmation questions from CallHome Corpus of American English. In §4, I will discuss the contrast in the use of Negative Interrogatives between *Inner Negation* and O*uter Negation* readings (Ladd 1981), and suggest that the contrast is due to distinct discourse functions. In §5, I will conclude.

2 Information and Confirmation questions

Confirmation questions are different from information questions insofar as the former lacks the neutrality of the latter. That is, while information questions function as a means to remedy a gap in the speaker's knowledge with regards to a certain state of affairs, confirmation questions highlight the speaker's belief that a certain state of affairs is mutual between the (S)peaker and the (H)earer. Put differently, confirmation questions address an anticipated conflict in the belief state of S and H, with the purpose of settling some controversial issue. For purpose of demonstration, (1) can only be used as an information question, while (2) can only be used for confirmation.

(1) Who composed The Nutcracker?

(2) Tchaikovsky composed The Nutcracker, right?

The wh-question in (1) presupposes that someone composed *The Nutcracker* and asks who the composer was. (1) is a degenerate proposition of the form __ *composed The Nutcracker.* Following the standard semantic analysis of questions (Hamblin 1958; Karttunen 1977; Groendijk & Stokhof 1997), in which the meaning of a question is the set of its possible answers, the question in (1) would return the set of possible composers, {Stravinsky, Prokofiev, Tchaikovsky, Khachaturian, …}. Note that (1) cannot be used as a confirmation question, since it cannot confirm an established proposition. That is, while (1) may be used to ask for new *information*, it cannot be used to *confirm* a proposition. Furthermore, supposing

that S believes that *it was Tchaikovsky who composed the Nutcracker*, she would not utter (1) to confirm that the belief that *Tchaikovsky is the composer* is mutual between S and H, but perhaps to 'quiz' H without divulging the answer. Note also that the wh-question in (1) is not biased, since it does not orient the speaker towards a particular answer.

The tag question in (2), on the other hand, confirms that the proposition *Tchaikovsky composed The Nutcracker* is true. This is accomplished by the tag word *right*, with a rise in intonation (which in print is indicated by *?*), following the declarative sentence (the anchor) *Tchaikovsky composed The Nutcracker*. The function of the tag word in (2) is to ask whether the preceding proposition (contained in the anchor) is true. That is, of the binary set of possible answers {{w: Tchaikovsky composed *The Nutcracker* in w}, {w: Tchiakovsky did not compose *The Nutcracker* in w}}, i.e. worlds in which the proposition is true, and worlds in which the proposition is false, the confirmation question in (2) highlights the speaker's belief that we are in a world *w* in which *Tchikovsky composed The Nutcracker* is true, and asks whether the hearer also shares that belief. A likely context for such use would be one in which S is either (a) led to believe that H does not believe the proposition *Tchaikovsky composed The Nutcracker,* and would hence like to settle the issue, or (b) S did not believe the proposition, but now has reason to believe it is true and confirms this new belief with H.

Note, however, that under the standard semantic analysis of questions alone, the bias of confirmation questions is left unrepresented. For illustration, consider the examples in (3), adapted from Büring and Gunlogson (2000).

(3) a. Was Tchaikovsky *right-handed*?
b. Was Tchaikovsky *left-handed*?
c. Tchaikovsky was *right-handed*?
d. Wasn't Tchaikovsky *right-handed*?
e. {{w: Tchaikovsky was right-handed in w}, {w: Tchaikovsky was left-handed in w}}

Under the proposition set analysis, questions (3a)-(3d) all return the set in (3e). Pragmatically, however, we do not want to say that (3a)-(3d) are equivalent. While a complete analysis of the distinction in the uses of (3a)-(3d) requires detailed analysis, we can confidently say that (3a)-(3d) each express a different bias with regards to the true answer. For instance, while (3a) may be used neutrally, (3b) seems to express the speaker's expectation that *Tchaikovsky was left-handed.* (3c) seems to express that the speaker used to believe that *Tchaikovsky was left-handed*, but now has reason to believe that *Tchaikovsky was right-handed*. (3d) is ambiguous between two readings: under one reading the question seems to expect a positive answer, whereas under a different reading the question anticipates a negative answer (I will return to this distinction below). None of these contrasts are captured by the representation in (3e), which simply says that either *Tchaikovsky was right-handed* is true, or *Tchaikovsky was left-handed* is true.

To summarize so far, I have shown that wh-questions do not function as confirmation questions, and that the bias of confirmation questions requires further technology than that provided by the standard semantic representation of questions.

2.1 The bias of polar questions

Positive polar (yes/no) interrogatives can be used either as information questions or confirmation questions.

(4) Will there be a performance of the Nutcracker this year?

As an information question, (3) can be used when S is neutral with regards to p, *there will be a performance of the Nutcracker this year,* or ~p, *there will not be a performance of the Nutcracker this year.* That is, S is equally uncertain about either state of affairs obtaining. As a confirmation question, however, S would be expressing her expectation that p will obtain, or has reason to believe that p will obtain, and asks H to confirm p.

(5) [Context: December]

a. H: Jane and I are going to the Ballet next week.
b. S: (Oh) will there be a performance of The Nutcracker this year?
c. S: (Oh) there will be a performance of The Nutcracker this year?

Respective to H's utterance in (5a), S is led to believe that p, *there will be a performance of the Nutcracker this year*, and can confirm her inference either by asking the positive interrogative in (5b) or the rising declarative in (5c). Importantly, we do not say that by uttering either question in (5), S confirms that ~p obtains. That is, to confirm ~p, S would not utter either question in (5), but use (6b) or (6c) instead.

(6) [Context: December]
a. H: There are no ballets in town this season.
b. S: (Oh) will there not be a performance of the Nutcracker this year?
c. S: (Oh) there will not be a performance of the Nutcracker this year?

Following (6a), S can confirm her inference ~p either by a negative interrogative (6b), or a rising negative declarative (6c). Following Gunlogson (2001), I assume that declarative questions are not information questions, since they bias the speaker towards the proposition contained in the question. That is, declarative questions cannot be used neutrally, or 'out of the blue', as demonstrated in (7).

(7) [Wishing to inquire about upcoming ballets, A walks up to the clerk at the box-office and asks]
S: # There will be a performance of the Nutcracker this year?

Negative polar interrogatives (NPI), on the other hand, raise an interesting issue with regards to speaker bias. As first noted by Ladd (1981), and subsequently Romero & Han (2002), Van Rooy & Safarova (2003), and Romero & Han (2004), unlike their positive counterpart, NPIs cannot be used neutrally. That is, while as confirmation questions positive interrogative questions bias the speaker towards the positive proposition *p*, NPIs may bias the speaker towards either *p* or *~p*. For illustration, consider the separate contexts in (8) and (9), and notice that the same question carries the opposite bias in either context.

(8) H: The company laid-off all the dancers and canceled Giselle.
S: Won't there be a performance of the Nutcracker this year (either)?

(9) H: Simone Orlando was awesome in Giselle. I wonder if she'll perform again soon.
S: Won't there be a performance of the Nutcracker this year (also)?

S asks the NPI in (8) to confirm her inference ~p, *there will not be a performance of The Nutcracker this year*. Ladd (1981) referred to this reading of NPIs as the *inner negation* reading. In (9), on the other hand, S confirms her belief p, *there will be a performance of The Nutcracker this year.* Ladd referred to this latter reading as the *outer negation.* Neither use of the NPI in (8) and (9) can serve as an information question as illustrated in (10).

(10) [Wishing to inquire about the upcoming ballet, S walks up to the clerk at the box-office and asks]
S: # Won't there be a performance of the Nutcracker this year?

Example (10) illustrates that the inherent bias of NPIs make them poor candidates for neutral questions.

Tag Questions (TQs) are another type of biased questions that have received some discussion in the literature. Ladd 1981 and Reese & Asher 2007 claim that tag questions *assert* the proposition in the 'anchor', and *question* the assertion via the 'tag', as a way to confirm the proposition asserted by the anchor.

(11) a. Tchaikovsky was right-handed, wasn't he?
Pos _ Anchor *Tag*

b. Tchaikovsky wasn't right-handed, was he?
Neg _ Anchor *Tag*

2.2 Advancing a unified approach to bias

Previous studies on biased questions, each offer a theory of bias that is particular to one syntactic type only. Unfortunately, it isn't always obvious how each different account of bias could be extended to other question types in a consistent manner.

Gunlogson's (2001) account of Declarative Question (DQ) bias, for example, is accounted for intonationally, where a falling intonation over a declarative utterance U commits the speaker to the propositional content of U, whereas a rising intonation over U commits the hearer. The intonational account, however, is not easily generalizable to interrogative utterances, since rising interrogatives are not always biased. Beun (2000) explores the bias of DQs in a series of experiments and reports that DQs often verify information that is already provided in the discourse context. He further notes that the use of a DQ correlates positively with S's certainty with respect to the propositional content of the DQ. The strength of Beun's study is in situating the distribution of DQs within the discourse context and noting that they often follow propositions that are already present in the discourse context.

Romero & Han (2002, 2004), and Romero (2005) attribute the bias of Negative Interrogatives to the epistemic operator, VERUM. They derive the p/~p bias of NPIs by means of scope ambiguity, where the p-reading results from NEGATION taking wide scope over VERUM, and the ~p-reading resulting from VERUM taking wide-scope over NEGATION. Presumably then, *bias* is a consequence of VERUM, which could be operative in other question types also, although they do not make this claim explicit. Pursuing this latter claim, we would have to explain why Tag Questions and negative Declarative Questions do not involve the same scope-ambiguity between VERUM and NEGATION that NPIs do. Furthermore, if the presence of VERUM distinguishes biased from neutral questions, how does VERUM associate with some positive polar interrogatives and not others? In other words, how is bias induced in the discourse context?

An alternative theory of the bias of NPIs is that of van Rooy & Safarova (2003), who employ Decision Theory in order to motivate the ambiguity of NPIs contextually. In their view, *?~p* is disambiguated depending on the utility value of *p-bias* at speaker's **current** state or her **previous** state. While their study offers a valuable insight to the epistemic state of the speaker asking *?~p*, further research remains to extend their analysis of NPI bias to biased questions of other syntactic types.

Lastly, the bias of Tag Questions has been attributed to the *Assertion* component of the question's anchor (Ladd's 1981 and Reese & Asher's 2007), without any further examination of discourse environments that induce their use.

In the remainder of the paper, I pursue an account of the function of confirmation questions and report their syntactic taxonomy from a Corpus Study. I argue that a close examination of the discourse environments in which confirmation questions of various syntactic forms occur will be a step forward towards a unified account of biased questions. I will further suggest that a study of the comparative distribution pattern of each syntactic question type will help us gain a better understanding of their unique bias effect.

2.3 Confirmation questions

Functionally, the distinction between information and confirmation polar questions may be defined as in (12), where CG (the Common Ground) is the set of propositions that are mutually believed between S and H, or assumed for the purpose of discourse (Stalnaker 1978).

(12) a. Information polar questions ask whether p *can be added* to CG.
b. Confirmation questions ask whether p *is non-controversially* in CG.

Following the distinction drawn in (9), it is clear that if *p* has already been added to *CG*, asking *?p,* would necessarily be a confirmation question. We will say that *p* is *given* in a discourse context, if it has been added to *CG*. In this respect, we can descriptively define confirmation questions as in (13).

(13) A polar question Q is a confirmation question iff the proposition it contains is *given* in the discourse context.

Proposition *p* is *given* iff *p* is mentioned, or else is inferable from the discourse context (i.e. via entailment, presupposition, or implicature) (Schwarzschild 1999, Beun 2000). Such a description captures the fact that, unlike information questions, confirmation questions must be situated within an established discourse context (i.e. Common Ground) amongst S and H, and cannot be used 'out of the blue' (e.g. *Who wrote the Nutcracker?,* or *Will there be any ballets this season?*).

3 A Corpus Study

3.1 Method

I selected 40 random conversations from the CallHome American English Corpus (LDC 1997), which is a corpus of 120 unscripted telephone conversations amongst friends and family, all originating in North America. The conversations are each 30 minutes long, 10 minutes of which are transcribed. I extracted every instance of polar questions from the 10 minutes that had been transcribed. I was able to locate questions by the question mark symbol, *?* from the transcript, and excluded utterances that lacked a question force, such as rhetorical questions, e.g. *isn't that crazy?, isn't that bizarre?*, and backchannels, e.g. *really?, yeah?*.

3.2 Results

The 10-minute transcripts of the 40 conversations (400 minutes) yielded 381 polar questions altogether, 282 of which functioned as confirmation questions. These questions were classified into four major categories and one subcategory described below.

3.2.1 Interrogative questions [+inversion]

By Interrogative, I refer to the syntactic form of polar questions that involve the inversion of the subject and the auxiliary, illustrated in (14).

(14) a. Is it thirty minutes?
b. Don't I need to be a professional?
c. Is his father not coming?

There were 162 interrogative questions in total. Since interrogative questions may be used either as information or confirmation questions, I classified an interrogative as a confirmation question only if (a) it was a negative polar interrogative (NPI); or (b) its propositional content was already given in the discourse context. There were 76/282 confirmation interrogatives (27%), only 8 of which were NPI.

3.2.2 Declarative questions [-inversion]

DQs refer to a declarative sentence that serves as a question (i.e. no inversion of subject and auxiliary). Questions of this type are often rising in intonation. (15) is an example.

(15) She lives in Michigan?

DQs were the most frequent of confirmation questions with a total of 82 instances (29%). Following Beun (2000) and Gunlogson (2001), I assumed that all DQs were confirmation questions. By and large, this assumption was consistent with the criterion of Givenness.

There was also a sub-category of questions that are ambiguous between Interrogatives and DQs, which I call Aux-drops. (16) is an example.

(16) And they still have just one daughter?

There were 34 Aux-drop questions in total (7.5 %), most of which occurred with the high frequency verbs, *know*, *mean*, *have* and *got*. 21/34 satisfied the Givenness criterion and were thus considered confirmation questions (62%).

3.2.3 Tag questions

By tag questions, I refer to declarative sentences that are followed by a question phrase (e.g. *right?, huh?, isn't it?* or *is he?*) that confirm the truth of the proposition contained in the sentence. (17) and (18) are examples.

(17) He's in New York now, right?

(18) So you really are out of touch, aren't you?

There were altogether 43 tag questions (15.25%). I treated all tag Questions as confirmation questions, because of their combined *Assertion* + *Question* force. (Ladd 1981; Haan & van Heuven 2003; Reese & Asher 2007).

3.2.4 Fragment questions

Fragment questions as a class have not been addressed in the literature. By a fragment question, I refer to any sub-clausal syntactic constituent used as a question (with a rising intonation). Fragment questions critically depend on the preceding discourse to recover their full proposition. (19a-e) are some examples of fragment questions.

(19) a. Not even Chris?
b. The kid sister thing?
c. From Omaha?
d. David Gordon?
e. Being stalked here?

There were 60 fragment questions in total (21.25%). Since fragment questions depend on the discourse context to recover their propositional content, they are inherently given and make poor information questions.

In total, 282/381 (74%) of the polar questions were confirmation questions. The distribution of confirmation questions of different syntactic types is summarized in Table 1.

Syntactic Type	Number of Tokens	Percentage
Interrogative	76	27
Declarative	82	29
Tag	43	15.25

Fragment	60	21.25
Aux-drop	21	7.5
Total	282	100

Table 1. Distribution of each syntactic type of confirmation questions.

3.3 Examples

Before concluding this section, I will illustrate the discourse function of each question type with an example.

(20) Interrogative question
a. A: Not enough *relatives* left here anymore?
b. B: Well the relative scene is kind of sad. You know *everybody's kind of, p- kind of passed away, almost.*
c. A: yeah, I remember when I talked to you in the fall
d. B: yeah. yeah.
e. A: that uh
f. B: It's just about
g. A: **oh did your sister die?**
h. B: My sister passed away, yeah.

B's utterance in (20b), *everybody's kind of ... passed away* entails that x *has died* & $x \in$ *Relative* (so long as it is a relevant answer to A's question in 20a). A draws the inference that B's sister has died and evaluates the status of the proposition *your sister has died* within the Common Ground.

(21) Declarative question
a. B: Then when will you come to *Rochester*?
b. A: I can co- I don't know. When are you going to Rochester?
c. B: mm soon as I've overcome jet lag, probably.
d. A: Well, by that time, I can't g-, then it won't be until the weekend. I can go on Monday night. I can go to Rochester. I don't assume that you'd be going there Monday night. *But I can get there Tuesday*, because I don't have another class until Thursday. Because Iggers is out of town.
e. B: yeah, I could do that maybe.
f. A: **y- you'd go to Rochester on Tuesday?**

A's utterance in (21d) entails that *A can get to Rochester on Tuesday*. B commits in (21e) to the proposition that *B could go to Rochester on Tuesday*. A confirms the proposition in (21e) as a DQ, evaluating the inference that *B would go to Rochester on Tuesday* is non-controversially in the Common Ground.

(22) Tag question
a. A: And then we saw Leo and Julie at Christmas time.
b. B: uh-huh.
c. A: And they're doing great. um, they had just moved to
d. B: **He's in New York now, right?**
e. A: a really nice house in Westchester. yeah, an o-
f. B: Good.

The topic of discourse at (22c) is Leo (&Julie)'s location. B interrupts A in (22d) to confirm his assumption that *Leo in in New York now* is non-controversially in the Common Ground, by asserting the proposition and deferring to B for confirmation via the tag, *right.*

(23) Fragment question
a. B: but th- th- they don't know if it was a bad bike accident or a major stroke that
b. A: uh-huh
c. B: created a bi- but he is
d. A: yeah
e. B: uh w- he nearly died we *so we spent a lot of time there* he was
f. A: oh
g. B: ((you know if))
h. A: **right after after the accident?**

In (23a), the proposition *he had bad bike accident* is added to the Common Ground. In (23e), B prefaces the assertion *we spent a lot of time there* by the discourse marker *so*, which gives rise to the implicature that *we spent a lot of time there* ***after the accident***. A confirms this implicature by posing the fragment question, which recovers the proposition *you spent a lot of time there at time t2 & and the accident happened at time t1,* asking if the inference is non-controversially in the Common Ground.

4 Discussion

While there have been a diverse number of treatments of the bias effect of questions of a particular syntactic type, there is no study that has investigated the discourse function of biased questions across these types. The corpus study reported above was an attempt to take inventory of the various syntactic questions that function as confirmation questions, with the intention of advancing an account of bias that can accommodate every question type. While the present study does not offer the contrast in the use of each question type, the following observations capture the use and function of confirmation questions that seem to be common to the four classes of questions discussed above.

A confirmation question Q_c confirms the proposition contained in Q_c, only if the propositional content of Q_c is *given* in the prior discourse, by asking *?p,* to ask whether *p* is non-controversially in the Common Ground*,* and *?~p,* to ask if *~p* is non-controversially in the Common Ground.

An apparent problem with this generalization, however, is Ladd's *outer negation,* which is a negative question that has the apparent use of confirming the positive proposition. I argue, following Reese (2006), that Ladd's *outer negation* does not involve a 'negative proposition' *per se,* rather that the *outer negation* is *metalinguistic negation* in the sense of Horn (1989), which functions as an 'objection' to the content, use, or register of the preceding utterance or an inference drawn from it. Consider Horn's example in (24).

(24) Chris didn't manage to solve {some/*any} problem—he solved them easily.

The negation in (24) not only allows the positive polarity item *some,* but also prohibits the negative polarity item *any.* What negation is targeting in (24) is the choice of the lexical item *manage,* and not the proposition itself. Note that *outer negation* NPIs, also, allow positive polarity items. In fact, negative polarity items force an *inner negation* reading.

(25) a. Isn't Jane coming too? (Outer Negation)
b. Isn't Jane coming either? (Inner Negation)

Reese (2006) argues that *outer negation* has the illocutionary force of *denial,* since *outer negation* NPIs pattern with positive assertions that are used as denials (26).

(26) a. A: Nobody handed in their assignment.

b. B: Jane turned in her assignment.
c. B: Didn't Jane turn in her assignment?

Note that the use of an *inner negation* in (26) would not function as *denial*, rather it would confirm the negative entailment of (26a), *Jane did not turn in her assignment.* Also note that the negative DQ in (27) serves just that function.

(27) Jane didn't turn in her assignment?

Common to both uses of the NPIs is S's initial positive assumption *p.* S asks an *inner negation* NPI if she has evidence to believe that H believes *~p,* and wishes to confirm the new inference *~p* before revising her belief. However, if S does not wish to revise her belief, but is certain that *p,* she could either assert *p,* or soften her denial by offering *p,* using *outer negation.* Note that the latter use is incompatible with a negative DQ (28e), but possible as a positive-anchor Tag Question (28c).

(28) a. A: Nobody handed in their assignment.
b. B: Jane handed in her assignment.
c. B: Jane handed in her assignment, didn't she?
d. B: Didn't Jane hand in her assignment?
e. B: Jane didn't hand in her assignment?

In (28), B's response functions as a denial in (b-d). (28d), however, could also get the *inner negation* reading, compatible with (28e), where B confirms her new inference *~p*, which is entailed by A's utterance.

In conclusion, it is possible to study the distribution and use of every syntactic confirmation question type by examining its effect in discourse. Furthermore, the recognition of *outer negation* as metalinguistic negation allows the generalization that confirmation questions evaluate the status of the proposition in the question within the Common Ground, without scope ambiguity or polarity reversal.

5 Conclusion and Future Research

This study drew a syntactic taxonomy of confirmation questions, with the generalization that in asking a confirmation question, the speaker addresses a conflict or doubt that has arisen in the discourse context, by asking *?p* to evaluate the status of *p* in the Common Ground, and *?~p* to evaluate the status of *~p.* These informal, although explicit observations prepare the background for a formal semantic/pragmatic treatment of biased questions. I noted four syntactic classes of polar questions, i. Interrogative Polar Questions, ii. Declarative Questions, iii. Tag Questions and iv. Fragment Questions. I leave a detailed study of the distinction across these syntactic classes for a future study. For simplicity, I have also excluded the prosody of confirmation questions, although I will investigate the interaction of the intonation and syntax of confirmation questions in a future paper.

References

Beun, R.J. 2000. Context and form: Declarative or Interrogative that is the Question. In H.C. Bunt & W Black (Eds.), *Abduction, Belief and Context in Dialoque* (pp. 311-326). Amsterdam: John Benjamins.

Büring, Daniel and Christine Gunlogson. 2000. *Aren't positive and negative polar questions the same?* Ms. Available at semanticsarchive.net.

Canavan, Alexandra., David Graff, and George Zipperlen. 1997.*CALLHOME American English Speech*. University of Pennsylvania: Linguistic Data Consortium.

Groenendijk, Jeroen, and Martin Stokhof. 1997. Questions. In J. van Bentham & A. ter Meulen (Eds.),

Handbook of logic and language: 1055-1124. Amsterdam: Elsevier.
Gunlogson, Christine. 2001. *True to Form*. PhD dissertation, UCSC.
Haan, Judith, and Vincent J. van Heuven. 2003. This is a Yes/No Questions? *Linguistics in the Netherlands 2003*, 59–70.
Hamblin, Charles L. 1958. Questions. *Australasian Journal of Philosophy* 36:159 – 168.
Horn, Laurence R. 1989. *A natural History of Negation.* Chicago: University of Chicago Press.
Karttunen, Lauri. 1977. Syntax and Semantics of Questions. *Linguistics and Philosophy* 1:3-44.
Kingsbury, Paul., Stephanie Strassel, Cynthia McLemore, and Robert McIntyre. 1997. *CALLHOME American English Transcripts.* University of Pennsylvania: Linguistic Data Consortium.
Ladd, Robert D. 1981. "A first look at the semantics and pragmatics of negative questions and tag questions." In *Papers from the Seventeenth Regional Meeting of the Chicago Linguistic Society*. Chicago Linguistics Society, 164–171.
Reese, Brian & Nicholas Asher. 2007. Biased Questions, Intonation and Discourse. *Manuscript* (extended version of the ISIS paper), University of Texas at Austin.
Reese, Brian. 2006. The Meaning and Use of Negative Polar Interrogatives. In O. Bonami and P. Cabredo Hofherr*, Empirical Issues in Syntax and Semantics 6*. Papers presented at CSSP 2005, 331-334.
Romero, Maribel. 2005. Two approaches to biased *yes/no* questions. In *Proceedings of the 24*th *West Coast Conference on Formal Linguistics*, ed. John Alderete, Chung hye Han, and Alexei Kochetov, 352–360. Somerville,MA: Cascadilla Press.
Romero, Maribel and Chung-hye Han. 2004. "On Yes/No Questions". *Linguistics and Philosophy*, 27:5, 609-658.
Romero, Maribel and Chung-hye Han. 2002. Verum Focus and Ladd's p / neg p Ambiguity. *Proceedings of Semantics and Linguistic Theory 12*. CLC Publications, Ithaca, NY, 204-224.
Schwarzschild, Roger. 1999. GIVENness, Avoid F and other Constraints on the Placement of Focus. *Natural Language Semantics*, 7(2): 141-177.
Stalnaker, R. 1978. Assertion. In P. Cole (ed.) *Pragmatics: Syntax and Semantics, Volume 9*. New York: Academic Press.
van Rooy, Robert, and Marie Safarova. 2003. On polar questions. In *Proceedings of Semantics and Linguistic Theory*, volume 13. Ithaca, NY: CLC Publications.

Suffix origin and stress shift: the Suffix Pattern Hypothesis

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Suffixes in English fall into two categories: stress-affecting and stress-neutral. The primary account for this distinction is level ordering, with stress-affecting suffixes attaching at Level 1, and stress-neutral suffixes attaching at Level 2, outside of Level 1 suffixation. Given the numerous faults to such an account, I instead propose the Suffix Pattern Hypothesis, which states that a suffix will coin new words with the same properties as it showed in borrowed words. Therefore, applied to stress, if a suffix shows evidence of shifting stress in borrowings, it will do so in coinings as well. I test my hypothesis against a dataset from Barnhart (1988), and conclude that the Suffix Pattern Hypothesis more fully accounts for the behavior shown by the differing types of suffixes than traditional accounts.

1 Introduction

Speakers of all languages create models off of examples they are given which they then apply through analogy to new forms. This paper deals with the existence of two kinds of suffixes in English: those that affect stress on the stem they attach to (henceforth called Level 1), and those that do not (henceforth called Level 2). The hypothesis that I will advance, called the Suffix Pattern Hypothesis, is that the only difference between these two kinds of suffixes is the behavior they exhibited upon entering English. Once a model for each suffix was established, coinings, or new words formed in English, were created through analogy to the pre-existing model. Backformations were also created in this way, by reanalyzing a word that was previously thought to be monomorphemic as a stem and a suffix; by removing the suffix, a new word was coined. Applied to stress, if a suffix affected stress in borrowings, then it would affect stress in future coinings. The formalized hypothesis is stated below.

> **Suffix Pattern Hypothesis:** The pattern of behavior shown by a suffix in borrowings into English will be used as the model for future coinings with that suffix.

Beyond predicting whether or not a suffix will affect stress in English coinings, the Suffix Pattern Hypothesis can also predict in which environments a suffix can attach, or other aspects of behavior beyond stress that a suffix shows. For instance, some suffixes can only attach to words of a certain stress pattern, like final stress or certain other suffixes, independent of so-called level ordering restrictions. The Suffix Pattern Hypothesis predicts these restrictions in a way that other theories cannot. This paper will focus on the stress differences between the two kinds of suffixes and the related data.

Before fully examining the Suffix Pattern Hypothesis and its predictions in section 3, I will first review background literature in subsection 2.1 and the various stress systems that have influenced English stress in subsection 2.2. In section 4, I will outline the methods used to test this hypothesis and the analysis of the data will follow in section 5.

2 Background

2.1 Previous accounts of level distinction

Early generative accounts (Chomsky & Halle 1968; Siegel 1979; Aronoff 1979) listed the difference between Level 1 and Level 2 as a difference in boundary between the stem and the suffix. Level 1 suffixes attached with a morpheme boundary (*+ity*), and so were counted when stress was applied

within the word level, but Level 2 suffixes attached outside a word boundary (#*ness*), and therefore did not affect stress.

An obvious problem for such an analysis is that some Level 1 suffixes can attach outside of Level 2 suffixes, which should not be possible as the word boundary is outside of the morpheme boundary. However, Level 1 suffixes can attach to Level 2 suffixes of Latinate origin, such as -*ment* in (1), but Level 1 suffixes cannot attach to a Level 2 suffix of Germanic origin, such as -*hood*, shown in (2).

(1) *government* → *governmental*
(2) *nationhood* → **nationhoodal*

Examples like (1) and (2) show that rather than level ordering restricting which suffixes can attach outside of other suffixes, the origin of the suffix is a better indicator. In general, Germanic suffixes can attach outside of Latinate suffixes, but Latinate suffixes cannot attach outside of Germanic.

Arguing further against level ordering in morphology, Fabb (1988) provided evidence that only a certain few cases of suffixes attaching outside of other suffixes were present in English. Level ordering, taking into account syntactic category restrictions, gives a total of 459 potential suffix pairs, yet only 50 such pairs are actually found, with some examples listed in (3). Furthermore, several pairs are actually in violation of the restriction of level ordering, with Level 1 suffixes attaching outside of Level 2. Examples of such pairs are given in (4).

(3) +ion+ary; +ion#er; +ion+al; +al+ity; +ic+ity; +al#ist
(4) #ist+ic; #ize+ation; #ment+al; #able+ity; #or+al

Given that almost as many suffix pairs respect level ordering as do not, level ordering cannot be responsible for how suffixes attach to one other, or indeed, if they are able to in the first place. Fabb proposes instead an account of selectional restrictions, whereby if a suffix has no selectional restrictions, it can attach freely; otherwise it is restricted heavily in the ways which it can attach to suffixes. This account is supported by the Suffix Pattern Hypothesis. The borrowings of suffixed words forms the base from which the selectional restrictions of a given suffix is created, and then respected in all future coinings using that suffix.

Beyond stress-affecting qualities, the difference in boundary supposedly resulted in another feature of Level 1 suffixes: the ability to attach to bound roots, shown in (6). However, Level 2 suffixes can also attach to bound roots, like in (5). The examples in (5) are extremely rare, because they are Germanic Level 2 suffixes where the root was once a free-standing word, but has dropped out of usage. The examples in (6) are rather common, as they are Latinate Level 2 suffixes where the root was simply not borrowed, leaving a gap.

(5) *gruesome, hapless, feckless*
(6) *sacrament, tutelage, regiment, sediment, supplement*

Previous accounts of stress-affecting and stress-neutral suffixes in English are unsatisfactory in describing and explaining the phenomenon. Level ordering makes predictions which are unattested and, even worse, prohibit forms that are well-attested in English. Fabb's selectional restrictions describe the data much better than level ordering; however, how these selectional restrictions are formed is not addressed. The Suffix Pattern Hypothesis incorporates and accounts for Fabb's selectional restrictions while also accounting for the differences in behavior that these suffixes show in regard to their ability to affect stress.

2.2 Stress Systems

At the root of a suffix's ability to affect stress is the language that English borrowed that suffix from. In order to fully examine the pattern of suffixed/unsuffixed word pairs from borrowings in English, a brief explanation of the stress systems in Old English, Latin and Old French is necessary.

2.2.1 Old English stress

The stress system of Old English was different than the stress system for Modern English. As a Germanic language, stress was counted from the left edge of a word, rather than the right (Quirk & Wrenn 1957; Campbell 1959; Halle & Keyser 1971; McCully & Hogg 1990; Mitchell 2001). The Old English stress system was as follows:

1. Primary stress was assigned to the first syllable of the stem, usually the first syllable of the word (Quirk & Wrenn 1957).
2. The only cases in which stress was not on the first syllable was when prefixes such as *be-* or *ge-* were attached to the word, thus *geˈfeoht* 'fought' and *beˈbod* 'command' (Campbell 1959).
3. If the prefix dominated the meaning, then the prefix was fully stressed (Quirk & Wrenn 1957). For example, *ofˈteon* 'to deprive' had an unstressed prefix while *ˈingangan* 'to go in' had a stressed prefix.

Because stress was assigned from the left, nothing added to the right edge of the word could affect the stress. Therefore, suffixes in Old English could not affect stress, and following the Suffix Pattern Hypothesis, we would predict that Old English suffixes would retain their inability to affect stress in Modern English. In addition, some suffixes, including *-hood*, originated as the second element in a compound word. Compound words had primary stress on the first syllable of the first element and secondary stress fell on the second element if both elements were of equal semantic weight (Campbell 1959), so such suffixes would also not affect stress.

2.2.2 Latin stress

The stress system for Latin was considerably closer to the stress system that Modern English is argued to have in all accounts since Chomsky & Halle (1968). Primary stress was placed according to a syllable's position from the right. The Latin stress system was as follows (Hammond 1976):

1. Primary stress fell on the penultimate syllable if it was heavy, i.e. containing a diphthong or a long vowel or a coda consonant.
2. If the penultimate syllable was light, then stress fell on the antepenultimate syllable.
3. Secondary stress fell two syllables before the primary stress in longer words.

Because stress was assigned from the right edge of a word in Latin, we find that suffixes affected stress, as is shown in (7), taken from Kent (1932).

(7) *ˈsapiēns* 'wise nom. sg.' → *sapiˈēntior* 'wiser nom. sg.'

However, suffixes in Latin did not have to affect stress. If the final syllable of the stem was light, and the penultimate syllable was heavy, then even after adding a suffix, the stress would remain on the heavy syllable. An example from English is given in lieu of one from Latin in (8).

(8) *conˈvention* → *conˈventional*

Therefore, while suffixes of Latin origin had a strong tendency to affect stress, they did not have to. As we will see later on, very few suffixes borrowed from Latin are wholly Level 1 or Level 2, by the criterion of changing the location of stress on every stem they attach to, but are, rather, somewhere in between.

2.2.3 Old French stress

Similar to Latin, the stress system for Old French counted from the right; however, there were

significant differences. The Old French stress system was as follows (Kibler 1984):

1. Primary stress generally fell on the last syllable.
2. If the last syllable contained a schwa, then primary stress was assigned to the penultimate syllable.

The Old French stress system arose from the Latin system through "the wholesale reduction and elimination of atonic syllables," which "made of Old French a language in which all words were either oxytone [stressed on the final syllable] or paroxytone [stressed on the second to last syllable], and, if paroxytone, then always ending in a syllable containing ə" (Pope 1952:102). This system would give rise to a preference for stress on the final syllable, which neither Old English nor Latin shared.

2.2.4 Interactions of Stress Systems

One curiosity concerning the stress patterns of borrowed words into Old and Middle English was that a large portion came from French, primarily Anglo-Norman. Thus, we would expect these borrowed words to display the stress pattern they exhibited in their native language. Using data taken from Dresher & Lahiri (2003), shown in (9), we see that words borrowed with French stress often alternated with the initial stress given by the Old English system, with the variant used determined by the needs of the meter of a given verse.

(9) *ci'tee ~ 'citee*; *com'fort ~ 'comfort*; *di'vers ~ 'diverse*; *ge'aunt ~ 'geant*; *Pla'to ~ 'Plato*; *pre'sent ~ 'present*

However, Dresher & Lahiri (2003) note that with very few exceptions, such words are stressed initially in Modern English, and Svensson (2004) presents 200 disyllabic words borrowed into English before 1500, of which 94% are now stressed on the initial syllable. Dresher & Lahiri (2003) argue that the shift to a more Latinate stress system was not completed until after a large influx of longer Latin words into English starting in the fifteenth century. Until that time, there simply was not enough evidence to allow speakers of English to reanalyze their stress system.

As most words in Old and Middle English were only one or two syllables long, if the initial syllable were to be stressed, it would fit both the Germanic stress system and the Latinate stress system, but not the French system. Given this situation, it would take an enormous amount of contrary evidence to switch to a French-like system, due to the overriding lack of word-final stress. However, to switch to a Latinate system would only require longer words borrowed from Latin with stress intact (i.e., non-initial stress) to initiate a shift.

For this reason, although most suffixes in French attracted primary stress, they did not retain it when borrowed into English, and were stressed according to the Latin system. There are suffixes borrowed from French in Modern English that do attract stress, including *-ee* and *-eer*; however, they were primarily borrowed into English starting from the seventeenth century onward. This difference in time proves crucial if we look at other recent borrowings from French. Svensson (2004) provides data showing that while recent borrowings retain final stress in American English (*ca'fé*), they have initial stress in British English (*'café*). Therefore, it may be that *-ee* and *-eer* have simply not been in English long enough. Also, Dresher & Lahiri (2003) argue that suffixes with primary stress on them were crucial in the switch from primary stress on the *left* to primary stress on the *right*. Due to lack of pairs found in the primary source, these suffixes are not dealt with in the current dataset. More research into these suffixes is clearly necessary.

In addition to these suffixes, there is a large class of words that seem to follow the French system of stress in English, namely that of verbs. Chomsky & Halle (1968:70) posit that, in verbs, stress is assigned to the last syllable if it is heavy, and to the penultimate syllable if the last syllable is light. McAuliffe (2009) argues that the development of final stress in verbs is primarily because, in Old English, prefixes on nouns were more likely to be stressed than on verbs, and therefore, verbs were accepted with both initial and final stress, while nouns could only be stressed initially. This pattern was then applied to words of Latinate origin, resulting in verbs composed of a prefix and a bound stem, such

as *per=mit* or *con=ceive* to be stressed on the stem rather than on the prefix.

3 The Suffix Pattern Hypothesis and its predictions

The hypothesis presented in this paper is the Suffix Pattern Hypothesis, which is restated below.

> **Suffix Pattern Hypothesis:** The pattern of behavior shown by a suffix in borrowings into English will be used as the model for future coinings with that suffix.

This hypothesis is primarily tested with regard to whether a suffix affects stress on the stem it attaches to or not. The prediction that it makes with regard to stress-affectability is as follows:

(10) For any given suffix, the proportion of Level 1 pairs to Level 2 pairs should be roughly equal in borrowings and coinings. Therefore, a suffix which has mostly Level 1 borrowed pairs should not have mostly Level 2 coined pairs, and vice versa.

One might also hypothesize that all Latinate suffixes should only be able to attach to words of Latinate origin, as they were borrowed attached to such words. However, given the predominance of Level 2 suffixes in Old English, we can expect suffixes that follow the Level 2 model will be more quickly accepted as native (i.e. not Latinate) by English speakers. In line with this thinking, we can make the additional prediction, listed below.

(11) The pattern of Level 2 suffixes should be easier to establish. Therefore, Level 2 suffixes should have more coinings and earlier coinings with fewer borrowings than Level 1 suffixes.

The remainder of this paper will focus on examining these predictions. While the Suffix Pattern Hypothesis makes predictions on a number of phenomena seen in the suffixes examined, such as Medial Laxing, which is the change in vowel quality of a previously stressed vowel once suffixation occurs, and Trisyllabic Shortening, which is the process by which stressed syllables shorten if they are three syllables or more from the end of a word, they are simply outside the scope of this paper.

4 Methods

The data taken for my research was gathered from The Barnhart Dictionary of Etymology (1988). Barnhart was chosen due to its emphasis on several topics important in this research. Firstly, the editors clearly delineated between sources of word formation, either borrowing, coining, or backformation, as well as noting where sources overlap. Secondly, particular attention is given to affixes, which are of extreme importance to this work. Tokens were manually entered into a spreadsheet as pairs of suffixed and unsuffixed words. Words containing a bound stem and a suffix were not entered. Monosyllabic words and their suffixed counterparts were entered, but taken out of the analysis, as their inclusion resulted in a bias toward Level 2[1]. In addition to the pair itself, dates for the entry of each word of the pair was recorded as well as the language they were borrowed from. I limited the data to suffixes attaching to words only, in keeping with Aronoff's (1979) theory of word-formation. While the data for bound root suffixation and the origin of those patterns warrants further research, it is simply beyond the scope of the current work.

Aronoff (1979:36-37) points out that the most productive of suffixes (such as *–ness* or *–ly*) do not always have the most listed forms. As the source consulted is necessarily made up of listed forms, it follows that the most productive suffix dealt with in this thesis will not necessarily have an enormous amount of tokens. Rather, the more listed a suffix, the greater number of pairs will be found in the current

1 Given that the majority of suffixes do not attract primary stress to themselves, the stress remains the same on a monosyllabic stem regardless of the suffix, resulting in the bias toward Level 2. For example, the stress on *'tone* will not change when *-ic* is attached, giving *'tonic*.

dataset.

Stress was later assigned in accordance with the Oxford English Dictionary (OED) Online. One inconsistency in the data is that where a pronunciation was in doubt, the American pronunciation was chosen to be entered; however, most pronunciations listed in the OED Online are for British English. While it would be ideal to have the exact stress that a suffix entered into English with, it is unfeasible for the current study, and thus the caveat must be made that the stress on which the hypothesis is being tested on has been subject to historical processes that may have obscured the original conditions of the suffix.

Following stress assignment, each pair was examined and given a score based on the location of stress in each member. If the location was the same, that pair was scored a 2, as in (12). If the location differed, then that pair was scored a 1 as in (13). There were two cases in which a pair was scored a 1.5: if the suffixed form had secondary stress in the place that the unsuffixed form had primary stress, as in (14), or if primary stress could be placed in multiple places and one of those overlapped with the other form, like in (15).

(12) *'person → 'personal*
(13) *'parent → pa'rental*
(14) *'cere,mony → ,cere'monial*
(15) *(')sa(')line → sa'linity*

With each pair scored, the average score for the suffix was computed. Suffixes were then assigned a Level based on their average score. Suffixes scoring a 1.90 or above were considered Level 2, and suffixes scoring below 1.90 were considered Level 1. While this may seem rather high for a cut-off point, as will be examined in greater detail later, even suffixes historically considered Level 1 displayed an unexpectedly high number of Level 2 pairs, with the average Level 1 score a 1.54. A total of 19 suffixes had enough data for a general pattern to be found, of which 7 were deemed Level 2 and 12 were deemed Level 1.

5 Analysis

The final dataset contained 2,863 pairs, or 5,726 tokens. Of these, 1,478 pairs were borrowings, 1,197 were coinings, and 193 were backformations, which are formed when a previously monomorphemic word is analyzed as a root and a suffix, and the root is coined by removing the suffix. While this paper concerns itself mostly with borrowings and coinings and has little data on backformations, backformations do provide key insights into several conclusions. The table below lists the numbers and ratios of borrowings, coinings and backformations for all Level 1 and Level 2 suffixes.

	Level 1	**Level 2**	**Total**
Number of Suffixes	12 (63%)	7 (37%)	19
Borrowings	1,286 (87%)	192 (13%)	1,478
Coinings	668 (56%)	524 (44%)	1,197
Backformations	191 (99%)	2 (1%)	193
Total	2,145 (75%)	718 (25%)	2,863

Table 1: Comparative numbers and ratios for Level 1 and Level 2 suffixes

Of the 2,863 pairs, the 12 Level 1 suffixes accounted for 2,145 total pairs, or 75%. However, Level 1 suffixes only accounted for 56% (668) of the total coinings, but 87% (1,286) of the total borrowings. If all suffixes had coined and borrowed in equal amounts, Level 1 suffixes should have accounted for 63% of pairs of all types. This difference in proportions shows that Level 1 suffixes overall borrowed more pairs than they coined. Interestingly, Level 1 suffixes account almost entirely for the backformations found in the dataset, which I will argue later is related to the increased tendency of

English speakers to regard borrowings as monomorphemic.

On the other hand, the 8 Level 2 suffixes accounted for 718 total pairs, or 25%. They accounted for 44% (524) of the total coinings, and only 13% (192) of the total borrowings. If all suffixes had coined and borrowing equally, Level 2 suffixes should have accounted for 37% of pairs of each type. These findings show that Level 2 suffixes on the whole needed relatively few borrowings to establish a pattern for coining in English. The lack of backformations indicates that Level 2 suffixed borrowings were only very rarely regarded as monomorphemic, in stark contrast to Level 1 suffixed borrowings.

To test the prediction that Level 2 suffixes would begin coining earlier than Level 1 suffixes, two measures were taken. The first was the average time between the first borrowing and the first coining of Level 1 suffixes and Level 2 suffixes as a whole. To determine where the peaks of borrowings and coinings for each suffix were, the average difference in years between the mean of the borrowings and the mean of the coinings for Level 1 suffixes and Level 2 suffixes was calculated. As will be explained later, these two measures must be taken together when analyzed.

Also, given Dresher & Lahiri's (2003) claim that suffixed forms were often borrowed before unsuffixed forms, the average time between those two events for Level 1 suffixes and Level 2 suffixes was gathered. This measure also has bearing on the relative likelihood of a suffix being analyzed as monomorphemic. With the individual suffixes, the more negative this number is, the larger number of backformations for that suffix are, specifically shown for the suffix -ion, which had the highest negative time (-56 years) and, by far, the most backformations (122 or 63% of all backformations in the dataset). Finally, the average score and the difference in scores of borrowings and coinings was calculated. These numbers appear in the table below, with analysis of the specific numbers following the table.

	Level 1	**Level 2**	**Difference (Level 1-2)**
Average time in years between first borrowing and first coining	189.6	74.7	114.9
Difference in years between means of borrowings and coinings	202.2	162.5	39.7
Average time between borrowing of unsuffixed word and borrowing of suffixed word	75.9	147.7	-71.8
Average score of all suffixes	1.54	1.97	-0.43
Difference in score of borrowings and coinings	0.03	0.03	0.00

Table 2: Overall differences in distribution for Level 1 and Level 2 suffixes

The first two measures give a clear indication that Level 2 suffixes became productive earlier than Level 1 suffixes. The average time between the first borrowing and the first coining for Level 2 suffixes is over 100 years earlier than for Level 1 suffixes. Also, the peaks of borrowing and coining, represented by the means, are about 40 years closer together for Level 2 suffixes than Level 1 suffixes. Although a large difference in the peaks of borrowing and coining can represent a lengthy period of productivity for coining, especially in Level 2 suffixes; on the whole, when taken with the previous measure, it provides evidence that coinings began sooner for Level 2 suffixes than Level 1 suffixes. According to this data, the prediction that Level 2 suffixes would be taken up more quickly in English than Level 1 suffixes is borne out in the dataset.

The third measure, testing Dresher & Lahiri's (2003) generalization, shows an interesting contrast. For both Level 1 and Level 2 suffixes, both are positive values, which shows that the suffixed word was more often borrowed later than the unsuffixed word, contrary to Dresher & Lahiri's claim. However, the difference of about 70 years in this measure gives secondary evidence to claim that Level 2 suffixes were regarded as suffixes more readily. Because Level 1 suffixed words were more likely than Level 2 suffixed words to be borrowed before their unsuffixed counterparts; there was a greater tendency to regard Level 1 suffixed words as monomorphemic when they entered English, as Dresher & Lahiri argue. Since that tendency was less pronounced in Level 2 suffixes, Level 2 suffixed words were more

likely to be viewed as morphologically complex. This explanation also accounts for the greater number of backformations in Level 1 suffixes than in Level 2 suffixes, as the need for backformations is greater when a monomorphemic word is reanalyzed as morphologically complex. Level 1 suffixed words were probably more likely to be analyzed as monomorphemic due to their differing stress than the stem they attached to; however, more research is necessary to ascertain the true reason for the difference.

The final two measures of the above table, that of average score and the difference in score of borrowings and coinings, show an interesting tendency in English. As mentioned previously, no suffix in English is truly Level 1. The lowest-scoring suffix is *–ation*, with a score of 1.04, but only because the suffix itself has primary stress on it. The overall average score for Level 1 suffixes in 1.54, which is more than halfway to being Level 2. Also, in all suffixes, there is a tendency to coin more words with a Level 2 stress pattern than a Level 1 pattern. This increase in Level 2 coinings gives further evidence that speakers of English prefer suffixes that do not affect stress over those that do.

6 Conclusion

The English stress system is clearly not universal or exceptionless. It has been shaped over the evolution of English by essentially two competing systems: the Old English system and the Latinate system, with recent influence by the French system. Because Old English and Latin would give similar outputs for the shorter words that make up the native vocabulary, English can be interpreted even today as having either of them. French, however, would give radically different outputs, with stress on the final syllable, and it has only been in the recent past few centuries that words have been borrowed from French with stress intact, and even these words may one day shift to being stressed by the Old English or the Latin system. It is unlikely that either the Old English system or the Latin system of stressing will gain enough ground to overtake the other, and so these competing systems will continue to shape our language in uneven and sometimes contradictory ways in the future, as well.

A crucial part of the stress system is suffixes, as they can either affect stress on a word or not. While this paper deals with a relatively small dataset and a relatively small number of suffixes, the Suffix Pattern Hypothesis correctly accounts for a majority of data across a number of predictions. Primarily, while the stress of coinings leans toward either Level 1 or Level 2 more than the borrowings in most cases, the stress patterns are never radically altered, so that Level 1 suffixes in borrowings can never become Level 2 suffixes in coinings, or vice versa. We can thus conclude that Level ordering itself has no real bearing on whether a suffix can affect stress, but rather is simply a categorical distinction. Whether a suffix affects stress is not related to at what point in a derivation it is attached to, but rather a paradigmatic sense of that suffix's ability to affect stress

The Suffix Pattern Hypothesis also provides an explanation for the relative ease with which Level 2 suffixes became productive in English. Logically, there is very little to distinguish the two kinds of suffixes, as they are both Latinate suffixes and were all borrowed attached to Latinate stems. Only because Level 2 suffixes existed in Old English, would it be possible for those kinds of suffixes to be understood more easily as suffixes, and to be used more easily by the native English speaking population, as well as with native words.

Besides the core predictions dealt with in this paper, the Suffix Pattern Hypothesis can also potentially explain why only certain suffixes display certain phonological behavior, such as palatalization, Trisyllabic Shortening, Medial Laxing and many others, and morphological behavior, such as attaching outside only certain other suffixes. Ultimately, the Suffix Pattern Hypothesis answers elegantly the question of where rules come from, and why they only affect certain words and not others.

Further research with a larger set of data is clearly warranted. Given the limited number of suffixes dealt with in this paper, more research on suffixes less well represented in English is necessary, especially stressed suffixes, such as *-ee* and *-eer*. Another fruitful avenue would be to expand the Suffix Pattern Hypothesis to prefixes in English as well, as the traditional account for prefixes in English is again that of level ordering.

References

Aronoff, Mark (1979). *Word Formation in Generative Grammar*. Cambridge, Mass.: The MIT Press.
Barnhart, Robert K. (1988). *The Barnhart Dictionary of Etymology*. The H.W. Wilson Company.
Campbell, A. (1959). *Old English grammar*. Oxford: Clarendon Press.
Chomsky, Noam & Halle, Morris (1968). *The Sound Pattern of English*. New York: Harper & Row.
Dresher, B. Elan & Lahiri, Aditi (2003). "Main Stress Left in Early Middle English." *Historical Linguistics 2003. Selected Papers from the 16th International Conference on Historical Linguistics, Copenhagen, 10-15 August 2003.* Amsterdam: John Benjamins.
Fabb, Nigel (1988). "English suffixation is constrained only by selectional restrictions." *Natural language and linguistic theory* 6:527-539.
Kent, Roland G. (1932). The Sounds of Latin: A Descriptive and Historical Phonology. In George Melville Bolling (Ed.), *Language Monographs* 12. Baltimore: Waverly Press, Inc.
Kibler, William W. (1984). *An Introduction to Old French.* New York: The Modern Language Association of America.
Hammond, Mason (1976). *Latin: A Historical and Linguistic Handbook*. Cambridge, Mass.: Harvard University Press.
McAuliffe, Michael (2009). *Final stress in verbs and the origins of diatones in English*. Unpublished manuscript.
McCully, C. B.; & Hogg, Richard M. (1990). "An account of Old English stress." *Journal of Linguistics*, *26*, 315-339.
Mitchell, Bruce & Robinson, Fred C. (2001). *A Guide to Old English* (6th edition ed.). Oxford: Blackwell.
Oxford English Dictionary Online (accessed April 2009). http://dictionary.oed.com/. Oxford University Press.
Pope, Mildred K. (1952). *From Latin to Modern French with Especial Consideration of Anglo-Norman*. London: Butler & Tanner Ltd.
Quirk, Randolph & Wrenn, C. L. (1957). *An Old English grammar* (2nd ed.). London: Methuen.
Siegel, Dorothy (1979). *Topics in English Morphology*. New York & London: Garland Publishing, Inc.
Svensson, Ann-Marie (2002). "On the stressing of French loanwords in English." *New Perspectives on English Historical Linguistics. Selected Papers from 12 ICEHL, Glasgow, 21-26 August 2002* v. II, ed. by Christian Kay, Carole Hough, and Irené Wotherspoon. Amsterdam: John Benjamins.

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Noun incorporation in Sora, a South Munda language

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In cross-linguistic research of noun incorporation, most studies claim that only direct objects and some intransitive subjects can be incorporated into the verb (e.g., Mithun 1984, Rosen 1989). Syntactic approaches such as Baker's Head Movement analysis (1988, 1995, 1996 and Baker et al. 2005) claim that only NPs that are properly governed can be incorporated, meaning that only direct objects can incorporate. Sora, a South Munda language of India, poses some problems to syntactic theories because agentive subjects can be incorporated into the verb. When we look more closely at Sora, however, we see that it is not any agentive subject NP that can be incorporated. The incorporated agentive noun always seems to be non-referential and perhaps less important to the discourse. Human subjects do not seem to incorporate. Furthermore, noun incorporation of agents results in a kind of functional passive construction.

1 Introduction

Since Sapir's (1911) early work on noun incorporation, there has been a lot of interest in the phenomenon. Following him, Mithun defines noun incorporation as the process by which 'a noun stem is compounded with a verb stem to yield a more specific, derived verb stem' (Mithun 1986:32). Noun incorporation in Sora challenges previous research on noun incorporation because it seems to allow the incorporation of agent NPs. Examples (1) and (2) show forms with and without noun incorporation. Example (3) shows noun incorporation of agents.

(1) *ɲen* *kənte-n* *jum-t-ai*
I banana-N.SFX eat-NPST-1
'I am eating a banana.'

(2) *ɲen* *jum-te-ti-n-ai*
I eat-banana-NPST-ITR-1
'I am banana-eating.' (Anderson & Harrison 2008:351)

(3) *ɲam-kid-t-am*
seize-tiger-NPST-2
'Tiger will seize you (you will be tiger-seized).' (Ramamurti 1931:40)

It is typologically unusual and formally problematic for an agent NP to be incorporated into the verb. Most languages only permit patients and some locatives or instrumentals to incorporate. I will suggest, however, that because noun incorporation of agents in Sora seems to be restricted to non-human agents acting on human patients, it functions like a passive construction. That is, it works to suppress or background a less important constituent.

In the remainder of this section I will provide some background to the Sora language. In section 2, I will describe noun incorporation in Sora. Section 3 is a discussion on the challenges that Sora noun incorporation poses to syntactic theories of noun incorporation such as Baker (1988, 1996).

1.1 Sora

Sora is a South Munda language spoken in the state of Orissa in central eastern India. There are approximately 300,000 speakers of Sora (Anderson 2007:5). Figure 1 shows a map of the region. The Munda family is part of the larger Austroasiatic family of languages, spoken throughout Southeast Asia. Figure 2 shows the Munda family tree.

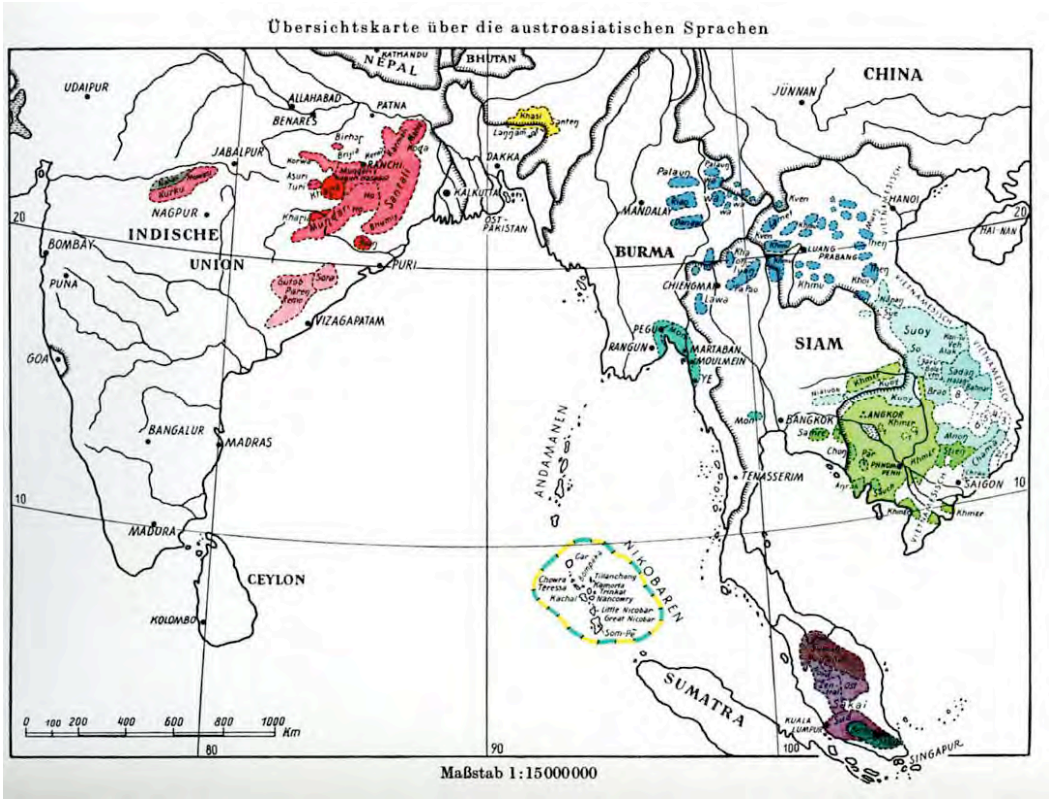


Figure 1: Map of Munda languages in India (Pinnow 1959)

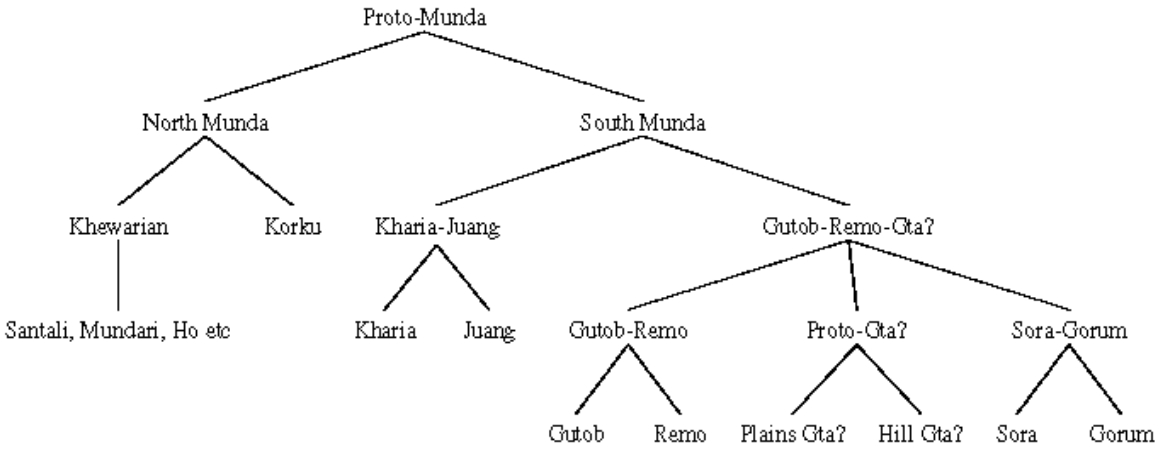


Figure 2: Munda family tree from Anderson (1999)

As in other Munda languages, the unmarked word order in Sora is SOV, as in (4).

(4) *ɲen* *kənte-n* *jum-t-ay*
I banana-N.SFX eat-NPST-1
'I am eating a banana.' (Anderson & Harrison 2008:351)

Sora verbs are complex and in the verb we can see subject and object affixes, tense/aspect suffxes, a negation prefix, as well as a suffix that Anderson (2007, 2008) calls an intransitivity marker. First, the subject markers are as follows: (from Anderson 2008:327).

	SG	PL
1	-ay	a-...-ay
2	-e[y]	a-...-e[y]
3	-e[y]	-dʒi

Table 1: Subject markers in Sora

The following sentences exemplify different types of intransitive sentences with the subject marked in the verb; an active or agentive intransitive verb (5), a stative-type verb (6) and a reflexive (7).

(5) *ɲem 'boʊnsəloʊ ba'ʈiy 'tuɭib-ən 'yeɽ-ɽ-eɪ*
I woman with forest-N.SFX go-PST-1
'I went to the forest with the woman.' (Anderson & Harrison 2008:320)

(6) *mɔɔɲ-t-en-dʒi*
happy-NPST-ITR-PL
'They are very happy.' (Anderson & Harrison 2008:333)

(7) *gi?'gi?-ti-n-ay*
REDPL:scratch-NPST-ITR-1
'I scratch myself.' (Anderson & Harrison 2008:333)

Some intransitive clauses are marked by -n in the verb (e.g., (6) and (7) above). Anderson calls this suffx an intransitivity marker. It appears with some reflexives, passives and other detransitivized verbs (Anderson 2008:333). Starosta calls this suffix 'middle voice' rather than intransitive because, he claims, it has other functions apart from reducing the transitivity of the clause. He defines middle voice as, "the action of the verb is taken to, in some way accrue to the subject, which might be either the logical object, or the agent of the action" (Starosta 1967:149). There are indeed some examples where the *–n* seems to be optional for that verb. Compare sentence (6) above with (8) below.

(6) *mɔɔɲ-tə-dʒi*
happy-NPST-PL
'They are very happy.'

There is most likely some pragmatic difference between the two sentences but it is yet to be tested with native speakers. We will see that verbs with noun incorporation sometimes, but not always, have *-n*. This point will be taken up again in section 2.

Objects are also marked in the verb in Sora. Forms for the object suffixes are shown in the following table taken from Anderson (2007:85):

	SG	DL	PL
1	-iɲ	-aj	-lɛn/ɲ
2	-əm		-bɛn
3	-e		-dʒi

Table 2: Object Markers in Sora

Some intransitive verbs have an object suffix marked in the verb as the single argument, as in (9).

(9) *anin boiboi barab-l-iɲ*
he very get.angry-PST-1
I got very angry at him.' (Starosta 1067:109, cited in Anderson & Harrison 2008)

Sora verbs are normally mono-personal, which means that either the subject or the object is marked in a transitive verb, but rarely both. Additionally, when there is only one argument marked on the verb, it is usually the object (either patient/theme or dative/recipient).

(10) *iando tɨd-t-iɲ*
why hit-NPST-1
'Why are you hitting me?' (Anderson & Harrison 2008:329)

(11) *anlen ɛr-gənij-ji*
we NEG-see/NEG/see-3PL
'We didn't see them.' (Starosta 1967:277, cited in Anderson & Harrison 2008:329)

(12) *ɲen daʔa-n tiy-t-am*
I water-N.SFX give-NPST-2
'I will give you water.' (Anderson & Harrison 2008:328)

The only cases where we see both object and subject marking in the verb are in clauses with a plural subject, as in the following examples.

(13) *aninji rban daʔa-n a-tɨy-l-əm-ji*
3.PL yesterday water-N.SFX NEG-give-PST-2-3.PL
'Yesterday they didn't give you water.' (Anderson & Harrison 2008:330)

(14) *ənlen aman daʔa-n aʔ-tiy-t-am*
1.PL 2SG water-N.SFX 1.PL-give-NPST-2
'We give you water.' (Anderson & Harrison 2008:330)

It is also possible for neither subject nor object to be marked in the verb, as in (15).

(15) *iɛr-ai-ɛn-a tiki aniniji gudeŋ-le*
go/come-CLOC-N.SFX-GEN after they call-PST
'After he came, he called them.' (Anderson & Harrison 2008:331)

In cases of noun incorporation, we will see that the subject is marked in the verb when the incorporated NP is patient, but when the agent is incorporated, we see object marking. In the following section, I describe noun incorporation in Sora.

2 Noun incorporation in Sora

Sora has three types of noun incorporation that I will describe here. First, Sora has very productive incorporation of objects, which also allows further modification of the object. We also see possessor raising with noun incorporation. Finally, and most interestingly, Sora seems to have incorporation of agent NPs.

2.1 Noun incorporation of objects

The most common type of noun incorporation in Sora is the incorporation of the patient or theme argument into the verb, as in example (16).

(16) *ɲen jum-te-ti-n-ai*
I eat-banana-NPST-ITR-1
'I am eating a banana.' (Anderson & Harrison 2008:351)

The incorporated noun is not in its full form (compare (16) with (4)). Rather a "combining form" is used. The combining forms are short forms of nouns, normally mono-syllabic or mono-moraic. These are used in nominal compounds and derivational word formation processes, as well as noun incorporation. Corresponding full forms, which are polysyllabic, are said to be derived from the combining forms by various means including reduplication, prefixation, infixation, suffixation and compounding with another nominal combining form. There is also a small number of suppletive forms (Anderson 2007:175). Some examples of combining forms with their full form counterparts are shown below in table 3.

Full form	Combining Form	Gloss
ədaŋ	-daŋ	'beehive'
ənselo	-boi	'woman'
aŋgaj	-gaj	'moon'
kinsod	-sod	'dog'
oʔon	-on	'child'
saŋsaŋ	-saŋ	'turmeric'
daʔa	-da	'water'
pənad	-pad	'latch'
bəled	-bed	'feathers'

Table 3: Full and combining forms of some nominals in Sora

The degree to which these forms can be systematically derived has been a matter of debate in the literature. A. Zide (1976) attempts to provide phonological rules to derive almost all combining forms. Starosta (1992) however, argues that the combing forms cannot be derived through generative rules and that they must be treated as cases of lexical derivation and therefore stored in the lexicon. The means by which combining forms of nouns are derived is, however, beyond the scope of this paper.

Nearly every noun in Sora has a combining form and so can be incorporated into a verb. Furthermore, Anderson and Harrison (2008:351-52) elicited full paradigms in past and non-past forms, demonstrating the productivity of this construction:

(17) *iɲen ɲam-yo-ti-n-ay*
I catch-fish-NPST-ITR-1
'I am fish-catching.'

(18) *amən ɲam-yo-ti-ɲ*
you catch-fish-NPST-ITR:2/3
'You are fish-catching.'

(19) *anlɛn a-ɲəm-yo-ti-n-ay*
we 1/2PL-catch-fish-NPST-ITR-1
'We are fish-catching.'

(20) *drban ɲen ɲəm-jaʔt-lɪ-n-ay*
yesterday 1.SG catch-snake-PST-ITR-1
'Yesterday I snake-caught.'

(21) *ɲəm-jaʔt-lɪ-n-ay*
catch-snake-PST-RFLX/ITR-3PL
'They snake-caught.'

(22) *aninji nemi ɲam-jaʔt-lɪ-n-ji*
they today catch-snake-PST-RFLX/ITR-3.PL
'They were snake-catching today.'

It is also possible to incorporate nouns in non-finite clauses, including nominalizations:

(23) *ɲam-yo:-le-n*
catch-fish-NF/SS/PST-ITR
'having caught fish' (Ramamurti 1931:142)

(24) *ɲəram-yo:-n*
catch.NMLZ.catch-fish-NOUN
'means of catching fish' (Ramamurti 1931:44)

(25) *ə-gik-kid-ben*
2PL-see-tiger-INF
'(for you) to see the tiger' (Ramamurti 1931:44)

When a noun is incorporated into the verb in Sora, the verb usually takes the suffix *-n,* which we see above in examples (17) to (22). The *-n* suffix was discussed above, in section 1.1. Anderson & Harrison (2008) call it an intransitive suffix, while Starosta calls it a 'middle' suffix.

Anderson (2007:188) claims that noun incorporation in Sora is not inherently valence-reducing because the suffix that he labels intransitive (*-n*) does not always appear with incorporation, as we see in the following two examples:

(26) *gad-bo:ŋ-t-e-ji*
cut-buffalo-NPST-3-PL
'They are cutting buffalo.' (Ramamurti 1931:49)

(27) *bagu-n-ji ɲaŋ=boj-ə-ji*
two-N.SFX-PL get/take=woman-PST-PL
'They both got married.' (Anderson & Harrison 2008:353)[1]

Other evidence that noun incorporation produces intransitive clauses is the fact that the subject

[1]It is not clear what Anderson & Harrison mean by marking *ɲaŋ* as a clitic. Perhaps *ɲaŋ=boj* 'get married' is a high frequency combination that is somehow treated differently. There do not seem to be any other instances of this though, so it may be a glossing error.

suffixes normally appear and not the object suffixes, as we see in regular transitive clauses. We see that in examples (17) to (22) where in each case the subject suffix is used and the incorporated object is not indexed in the object slot.

If we look at example (26), however, it is not so clear that this is an intransitive clause, supporting Anderson & Harrison's claim that noun incorporation is not always a detransitivizing construction. In this example, we see an absence of *-n* and what looks like both subject and object marking in the verb. If *-e* refers to the 3rd person object, 'buffalo', then it is possible that this buffalo is a specific or identifiable referent and not non-specific as is frequently the case with incorporated objects.

The *-n* suffix also has a reflexive reading. Compare the following examples:

(28) *kuŋ-bəb-t-ɛ*
shave-head-NPST-3
'[You] shave (s.o's) head.'

(29) *kuŋ-bəb-t-əm*
head-shave-NPST-2
'Your head is shaven.' (Biligri 1965:240)

(30) *kuŋ-bəb-te-n*
shave-head-NPST-ITR
'[You] shave [your] head.'

In the examples without the *-n* suffix, (28) and (29), the object is understood as being non-reflexive, while the example with the *-n* (30) gives the reflexive reading.

Historically, the *-n* suffix is, according to Starosta, the remnant of a "dummy object". Both the *–n* suffix and the pronominal object markers occur in the same slot in the verb. It seems that there is only one slot for an object and it is filled by either *-n* or a pronominal object. Starosta's informant told him that verbs that occur with *-n* signify either, that there is no object stated, or implied, or that the object could be anything (Starosta 1967:134).

That brings us back to examples (26) and (27). In the first, (26), the object is referenced in the verb, with *-e*. This suggests the hypothesis that in this example, the object 'buffalo' is more specific and perhaps more referential than in regular noun incorporation which has the *–n* suffix. In the second example, (27), there is neither an object marker or the *-n* suffix. Perhaps *–n* would give a reading like, 'they married themselves'. Both of these suggestions need to be checked with native speakers.

2.2 Doubling and modifying of incorporated nominals

Sora also allows an external noun to appear with the incorporated noun, exemplifying 'doubling' as in (31).

(31) *a-jiŋ-ɪn-ji* *aba:-jiŋ-t-ai*
3-foot-N.SFX-PL wash-foot-NPST-1
'I am washing their feet.' (lit: 'I am foot-washing their feet').
(Anderson & Harrison 2008:354)

(32) *ɲen* *janɖɻumsi-ɲeɲ* *aba:-si-t-ai*
I right.hand-1 wash-hand-NPST-1
'I am washing my right hand.' (Anderson & Harrison 2008:354)

(33) *kaŋɖɻabuɭimsi-ɲeɲ* *aba:-si-t-ai*
left.hand-1 wash-hand-NPST-1
'I am washing my left hand.' (Anderson & Harrison 2008:354)

Anderson and Harrison also claim that it is possible for the incorporated noun to be further modified. In example (34), we see the unincorporated version and (35) shows noun incorporation with the "adjective" modifying it outside the verb.

(34) *ɲen suʃa jaʔad-an ɲan-t-ay*
I big snake-N.SFX catch-NPST-1
'I am catching a big snake.' (Anderson & Harrison 2008:354)

(35) *ɲen suʃa ɲam-jaʔt-tɪ-n-ay*
I big catch-snake-NPST-RFLX/ITR-1
'I am big snake catching.' (Anderson & Harrison 2008:355)

However, not all modifiers were acceptable to Anderson & Harrison's consultant. The following sentence was rejected, which suggests that there is a cline of acceptability for external modifiers.

(36) **ɲen kuluʔ ɲam-jat-tɪ-n-ay*
I green catch-snake-NPST-RFLX/ITR-1
*'I am green snake catching.' (Anderson & Harrison 2008:355)

According to Anderson & Harrison (2008:325), "adjectives" are not an independent word class, separate from nouns, in Sora. It is therefore possible that example (35) is more like doubling than modifying. This is difficult to verify, but might help explain why not all "adjectives" were acceptable.

In the next section, I look at possessor raising in Sora, and we see another construction where the *-n* suffix does not appear.

2.3 Possessor raising

As in many languages, Sora allows a possessor to occupy the object affix slot in the verb in cases where the possessum has been incorporated.

(37) *ɲen ag-ga:-si:-am*
I NEG-drink-hand-2
'I will not drink from your hand.' (Ramamurti 1931:142, cited in Anderson & Harrison 2008:355)

(38) *ji-lo:-si:-t-am*
stick-earth-hand-NPST-2
'Mud will stick to your hand.' (Anderson & Harrison 2008:355)

Note that the *-n* suffix does not appear in either of these examples and that the subject is not indexed in the verb, as we saw above in the typical noun incorporation with patients. The only pronominal reference in the verb is the possessor which has been "raised" to object position. Thus, in the possessor raising type noun incorporation, we still have a transitive construction.

2.4 Noun incorporation of agents

The most typologically interesting aspect of noun incorporation in Sora is that the semantic agent argument of a transitive verb can be incorporated into the verb. Compare examples (39) and (40).

(39) *kina-n ɲam-t-am*
tiger-N.SFX seize-NPST-2
'The tiger will seize you.' (Ramamurti 1931:40, cited in Anderson & Harrison 2008:356)

(40) *ɲam-kid-t-am*
seize-tiger-NPST-2
'Tiger will seize you.' (lit: 'You will be tiger-seized.') (Ramamurti 1931:40, cited in Anderson & Harrison 2008:356)

The first shows the sentence without noun incorporation and the second is the incorporated form. We notice that there is no *-n* suffix in (40). It is not clear whether 'the tiger' is referential in either example. Anderson & Harrison were able to elicit full paradigms with incorporated subjects, in all tenses with all persons as syntactic objects (Anderson & Harrison 2008:357).

There is no evidence that intransitive subjects, either 'unergatives' or 'unaccusatives' can be incorporated into the verb in Sora. Therefore, it is preferable to call this type of incorporation agent incorporation rather than subject incorporation at this stage. I will return to this point in section 3.

In sentences with agent incorporation, as in (40), the *-n* suffix never appears, unlike most instances of noun incorporation with the theme argument. Furthermore, with agent incorporation, the person affix in the verb is an object marker referring to the semantic patient. Compare (40) with noun incorporation of a patient argument, as in (41).

(41) *ɲam-kid-te-n-ai*
seize-tiger-NPST-ITR-1
'I will seize the tiger.' ('I will tiger-seize.') (Ramamurti 1931:40, cited in Anderson & Harrison 2008:356)

In (41), we see the *-n* suffix, and the person marker in final position in the verb is the subject marker. Sentence (40) might be understood as a kind of non-promotional passive. This is non-promotional because *-am* remains in object position and in object case (*-e[y]* is the second person subject marker).

Passive constructions are not well documented for Sora. Anderson and Harrison (2008:343) claim that there is little valence-reducing morphology in Sora, only citing the *-n* suffix as having optional passive semantics. They give just one example of a sentence that is functionally passive-like because the agent NP of a transitive stem is suppressed, as in (42).

(42) *gij-l-iɲ*
see-PST-1
'I was seen' (Biligri 1965:233, cited in Anderson & Harrison 2008: 344)

If we compare example (40) with (42), it does seem as if agent incorporation might be functionally a type of passive in Sora: the incorporation of the agent is simply one way of suppressing it.

Further support for the argument that this might be a passive-type construction comes when we examine more examples of incorporated agents.

(43) *sa:-bud-t-am*
mangle-bear-NPST-2
'Bear will mangle you'

(44) *mo-kul-t-am*
swallow-ghost-NPST-2
'Ghost will swallow you'

(45) *paɲ-sum-t-am*
carry-spirit-NPST-2
'Spirit will carry you away' (Ramamurti 1931:142, cited in Anderson & Harrison 2008:356)

All the incorporated agent arguments in the examples we have are of non-human agents. They are furthermore acting on a human patient that is a speech act participant. Both noun incorporation and canonical passive constructions are ways of suppressing one argument and allowing another to be promoted. With noun incorporation, the de-emphasized argument is, typologically speaking, normally a patient or theme. Sora demonstrates that other arguments, including the transitive agent, may be de-emphasized using the same construction.

There is no evidence in the currently-available data whether the incorporated agent is referential or not. This needs to be investigated with native speakers. However, given the similarities with passive constructions cross-linguistically and the fact that the data we have all refer to non-human agents, it seems that the incorporated agent is probably not referential. The verb-noun combination could refer to a unitary event with an unspecified agent.

In the following section, I consider noun incorporation in Sora in the context of Baker's head movement theory of noun incorporation (1988, 1996). We see that noun incorporation of agents in Sora contradicts his predictions about which arguments can be incorporated into the verb.

3 Discussion

Theories of noun incorporation fall into two broad categories; some researchers claim that noun incorporation is a syntactic operation (e.g., Baker 1988, 1996) while others maintain that it is lexical and verb-noun combinations are constructed in the lexicon (e.g., Mithun 1984). One important issue that many theories of noun incorporation address is the question of what can be incorporated.

Mithun makes no claims regarding which semantic arguments can be incorporated into the verb. She notes that the relationships between the constituents of incorporated forms and their independent counterparts "can be straightforward, complex or idiosyncratic" (Mithun 1984:875). Di Sciullo and Williams, in another lexical analysis of noun incorporation, argue that the noun must be an argument of the incorporating verb, but do not make predictions about which argument (1987:67).

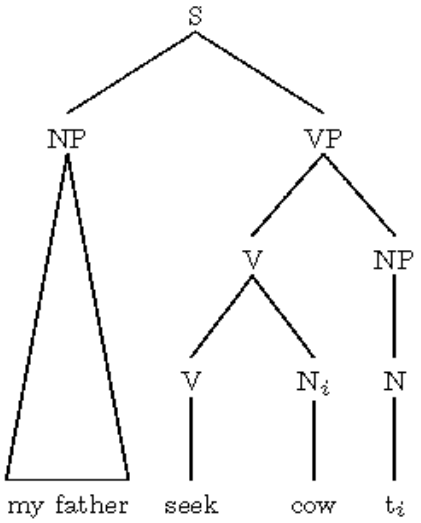
Baker argues that only underlying direct objects can incorporate and this stems from his claim that noun incorporation is an instance of head movement. Direct objects are the only NPs in an X^0 position that are in the right structural configuration with the lexical verb to undergo noun incorporation (Baker 1996:306). Agents cannot incorporate because they are external to the VP's maximal projection and there is no way to incorporate the subject in an 'economically' sound way (economic in the sense of Chomsky 1992). However, 'unaccusative' intransitive subjects can incorporate because they are 'underlying' direct objects, according to him (Baker 1995:294).

Baker provides the following example of noun incorporation from Mapudungun:

(46) *ñi chao kintu-waka-le-y*
my father seek-cow-PROG-IND.3SS
'My father is looking for the cows.' (Baker 2009:149)

A simplified version of Baker's Head Movement analysis for noun incorporation looks like the following (Baker 2009:150):

(47)



Baker's analysis seems to work for the languages that he deals with (Mapudungun, Mohawk, English). He predicts that incorporation of agentive subjects is not possible because of their structural position in the tree and in these languages, there is indeed no incorporation of agents. Baker (1996) notes that some languages are said to allow non-patients to incorporate. He suggests here that incorporation of instruments, locatives and other adjuncts might not be true instances of movement in the syntax, but rather N-V compounding formed in the lexicon (Baker 1996:295). Baker (1996) does not explicitly mention incorporation of agents, but we might suppose they come under his conception of a `second order effect' of noun incorporation (Baker 1996:295).

Noun incorporation of agents in Sora presents a problems to Baker's theory of noun incorporation. There is no way in a formal syntactic theory that takes little account of semantics and less of discourse structure to account for how an agent can incorporate. They are not underlying direct objects.

4 Conclusion

In this paper I have presented data on noun incorporation in Sora, which is claimed to be a highly productive construction. Almost every noun has a combining form that is used for noun incorporation. The most interesting fact of noun incorporation in Sora is that agents can incorporate. This is cross-linguistically unusual and difficult for Baker's (1988, 1996) syntactic theory. An analysis that claims that some kinds of incorporation are lexical while others are syntactic is unsatisfactory when there are structural parallels between agent and patient/theme incorporation.

There are still many questions that need to be answered before we have a complete description of noun incorporation of agents in Sora.

Noun incorporation in Sora is claimed to be highly productive but we need more data to test the limits of incorporation with agent NPs. It is necessary to see whether human agents can be incorporated in the same way. Perhaps only agents that are lower on the animacy hierarchy can be incorporated as a kind of backgrounding device but this needs to be investigated, ideally with discourse data. A related question is whether the patient always needs to be pronominally indexed in the verb in instances of agent incorporation. Can the patient be a full form NP external to the verb?

If agent noun incorporation is truly productive in Sora, we might expect that some intransitive subjects can also be incorporated, particularly unergative ones, but also unaccusative subjects. This will help clarify to what extent agent-incorporation is passive-like functionally.

Noun incorporation in Sora suggests that noun incorporation is simply a type of productive compounding that happens in the lexicon and refers to unitary activities. Functionally, incorporation with agents in Sora has strong parallels with a non-promotional passive construction. Further research will test the productivity of this interesting phenomenon.

Abbreviations

1	First person
2	Second person
3	Third person
CLOC	Cislocative
GEN	Genitive
IND	Indicative
INF	Infinitive
ITR	Intransitive
NEG	Negative
NMLZ	Nominalizer
NPST	Non-past
N.SFX	Noun suffix
PL	Plural
PROG	Progressive
PST	Past
REDPL	Reduplication
RFLX	Reflexive
SG	Singular
SS	Same subject

References

Anderson, G. D. S. 1999. 'A new classification of the Munda languages: Evidence from comparative verb morphology.' Paper presented at the 209th meeting of the American Oriental Society, Baltimore.

Anderson, G. D. S. 2007. *The Munda Verb: Typological Perspectives*. Berlin: de Gruyter.

Anderson, G. D. S. & Harrison, K. D. 2008. 'Sora', in G. D. S. Anderson, ed., *The Munda Languages*, New York: Routledge.

Baker, M. C. 1988. *Incorporation: A theory of Grammatical Function Changing*. Chicago: The University of Chicago Press.

Baker, M. C. 1995. 'Lexical and nonlexical noun incorporation' in U. Egli, P. Pause & C. Schwarze, eds, *Lexical Knowledge in the Organization of Language*. Amsterdam: John Benjamins, pp. 3-34.

Baker, M. C. 1996. *The Polysynthesis Parameter*. Oxford: Oxford University Press.

Baker, M. C., Aranovich, R. & Golluscio, L. 2005. 'Two types of syntactic noun incorporation', *Language* 81, 138-176.

Biligri, H. M. 1965. 'The Sora verb', *Lingua* 15, 231-250.

Chomsky, N. 1992. 'A minimalist program for linguistic theory.' Ms., Cambridge, Mass.: MIT.

Mithun, M. 1984. 'The evolution of noun incorporation.' *Language* 60(4), 847-894.

Mithun, M. 1986. 'On the nature of noun incorporation' *Language* 62(1), 32-37.

Pinnow, H.-J. 1959. *Versuch einer historischen Lautlehre der Kharia-sprache*, Weisbaden: Otto Harrassawitz.

Ramamurti, G. V. 1931. *A Manual of the So:ra (or Savara) Language*. Madras: Government Press.

Rosen, S. 1989. 'Two types of noun incorporation.' *Language* 65(2), 294-317.

Sapir, E. 1911. 'The problem of noun incorporation in american languages', *American Anthropologist* 13, 250-82.

Starosta, S. 1967. Sora Syntax: A generative approach to a Munda language, PhD thesis, University of Wisconsin.

Starosta, S. 1992. 'Sora combining forms and pseudo-compounding.' *Mon-Khmer Studies* XVIII-XIX pp. 78-105.

Zide, A. 1976. 'Nominal combining forms in Sora and Gorum' in P. Jenner, L. Thompson & S. Starosta, eds, '*Austroasiatic Studies. Part II*.' Honolulu: University of Hawaii Press, pp. 1259-1293.

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The Syntactic and Semantic Status of the Reflexive and Reciprocal in Shona*

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According to the standard binding theory of Chomsky (1981), reflexives and reciprocals can be collapsed under the umbrella term *anaphor*. This predicts a uniformity in form and behaviour between these two phenomena. Data from Shona (Narrow Bantu) is presented showing that while the reflexive of that language has the syntactic and semantic character of a bound variable, the reciprocal works as a detransitivising operation on verbal predicates. Through this, a description of the syntactic and semantic forms of both the reflexive and the reciprocal is presented, including a model lambda calculus.

1 Introduction

In the first formulation of the standard binding theory (Chomsky, 1981), reflexive pronouns and reciprocal expressions are grouped together under the umbrella term *anaphor*. This grouping is based on English data such as that seen in (1) and (2):

(1) a. I showed Jack$_i$ himself$_i$ in the mirror.
b. * I showed himself$_i$ Jack$_i$ in the mirror.

(2) a. I showed [Janet and Chrissy]$_i$ each other$_i$ in the mirror.
b. * I showed each other$_i$ [Janet and Chrissy]$_i$ in the mirror.

As shown, both reflexives and reciprocals in English have the same felicity conditions: they require a c-commanding antecedent within their binding domain. In the ditransitive structures of (1) and (2), asymmetric c-command is well-documented, in that the indirect object c-commands the direct object, but not vice-versa. While there have been various refinements to the binding theory in the years since, this conflation of reflexives and reciprocals under the term *anaphor* has gone largely unchallenged.

Even in languages where there are no reflexive or reciprocal DPs, there is an expectation that these two phenomena will be expressed through similar morphosyntactic means. In the case of Halkomelem Salish, this is through a detransitivising affix on the verb (Gerdts, 2000):

(3) a. k^{w}es “burn”
b. k^{w}eseθət “burn self ”
c. k^{w}estəl “burn each other”

As shown, both the reflexive and the reciprocal in this language are derived through affixation to a verb root, yielding a form which is syntactically intransitive, but semantically transitive. These are markedly different from English, but the language itself remains internally consistent in its treatment of reflexives and reciprocals, so the grouping of these two phenomena still holds.

In this paper, I present data from Shona, a Bantu language of Zimbabwe, which shows that reflexives and reciprocals do not in fact form a universal natural class. The reflexive in Shona has the distribution of a DP, filling an argument position, whereas the reciprocal is a detransitiviser, eliminating an argument position from the syntax.

This paper will be structured as follows: Section 2 will present the basic data on the reflexive and

* All data presented are from original fieldwork with a speaker of the Karanga dialect of Shona, unless otherwise indicated. Many thanks to my consultant, my Shona colleages at UBC, and to the audience at NWLC for their support. All errors are my own.

reciprocal forms of Shona, along with a very basic description of the morphosyntax of the language. Section 3 will detail the arguments proving that the reflexive is not a detransitiviser, and the reciprocal is not an anaphor. Finally, in Section 4, a model lambda calculus for both the reflexive and reciprocal is presented. A brief conclusion and discussion of unanswered questions is presented in Section 5.

2 Reflexives, reciprocals, and verbal morphology

Reflexives in Shona are represented using the morpheme *zvi*, affixed immediately to the left of the verb root:

(4) a. Mufaro a-ka-zvi-pis-a.
Mufaro SUBJ.1-REM.PST-REFL-burn-FV forest
'Mufaro burned himself.'
b. Nda-ka-zvi-bik-a.
SUBJ.1ST.SG-REM.PST-REFL-cook-FV
'I cooked myself.'
c. Ta-ka-zvi-nzw-a.
SUBJ.1ST.PL-REM.PST-REFL-hear-FV
'We heard ourselves.'

One striking feature of this abridged paradigm is that the reflexive here is invariable across φ-features. In the literature, the status of this morpheme is variable. In essence, the debate is over whether this morpheme is a detransitivising affix, or an object marker. Because there is no apparent inflection for φ-features of the antecedent, and because the language has a rich set of valence-altering verbal affixes, the temptation to classify *zvi* among this set of affixes is clear. Conversely, this position immediately to the left of the verb root is canonically the position for object markers in the language. To fully understand the implications of placing *zvi* among the set of object markers, the morphosyntactic character of these object markers must first be described.

Questions surrounding the nature of the object markers are not merely a puzzle for Shona; the issue remains a contentious one across the Bantu languages. In essence, the issue again breaks down into two camps: on the one side there are those who view these markers as purely an agreement phenomenon, and on the other are those who treat the object markers as some sort of clitic pronoun. As with the matter of the reflexive marker, there is no clear unanimous claim made in the Shona literature on this matter, though basic functions of the object markers are clear and uncontroversial. The following near-minimal pair from Fortune (1973) illustrates one function of the object markers in Shona:

(5) a. Ndi-no-tem-a huni.
SUBJ.1ST-HAB-chop-FV firewood.NC10
'I chop firewood.'
b. Ndi-no-dzi-tem-a huni.
SUBJ.1ST-HAB-OBJ.10-chop-FV firewood.NC10
'I chop firewood.'

As indicated, the object marker is not glossed as contributing any new meaning to the sentence. It does however show noun class agreement with *huni*. In the discussion of this example, Fortune describes the contribution of the object marker as being one of emphasis. In my own fieldwork, this claim of emphasis is often repeated, though also along with definiteness, which has been cited as a function of object markers in Swahili, along with topicality (Creissels, 2001). Similarly, Kunene (1975) notes for Zulu that object markers in that language are licensed only when the object being marked has been mentioned in previous discourse. Clearly, there is some connection between object marking and information structure.

The arguments for treating the object marker as a sort of pronominal element comes from data such as (6):

(6) a. Shingi a-ka-bik-a mbudzi.
Shingi SUBJ.1-REM.PST-cook-FV goat.CL9
'Shingi cooked the goat.'
b. Shingi a-ka-yi-bik-a.
Shingi SUBJ.1-REM.PST-OBJ.9-cook-FV
'Shingi cooked it.'

Here, the same agreement for noun class is shown, but the object marker can completely replace the object DP. Because the object marker replaces the object DP, it has been historically treated as an object pronoun. This is not necessarily at odds with the data in (5), where the object marker and the DP object co-occur, as clitic-doubing is a well-documented phenomenon in European languages. However, agreement with a covert element is pervasive in *pro*-drop languages where verbal morphology is argued to show agreement with a φ-feature rich, but phonologically null *pro*. There is no reason this same analysis cannot be applied to (6b), treating the object marker *yi* as reflecting agreement with a class 9 *pro*. This is the line of analysis I will be assuming in this paper, treating object markers as an agreement phenomenon rather than pronominal elements.

While details surrounding the optionality of this agreement remain to be established, some preliminary assumptions as to the position and syntactic character of the object markers can be made. Taking seriously the Mirror Principle of Baker (1985), the position of the object marker in the morphology should give a clue as to its position in the syntactic clause structure. In this case, the object marker appears between the verb root and the tense marking. Given this position, the most reasonable placement for the object marker would be as a *v* head. However, Shona also has a voice morpheme which is a more likely candidate for the *v* head. Given that the passive can co-occur with object markers (Bliss and Storoshenko, 2008), object markers must occupy a distinct position in the syntax from the passive morpheme, making it impossible to place the object markers at *v*. One solution to this issue in existing literature is to posit an Agr_o phrase below the tense projection, providing a position for the object markers. It is this analysis which is adopted here, with a caveat again that more needs to be done on describing the exact nature of this phrase. Given its optional nature, object marking cannot be connected to any mechanism of obligatory movement (overt or covert) for the purpose of case checking. That being said, there is as yet no evidence to rule out the possibility that there is covert movement into a local checking relation. By whatever mechanism (Spec-Head Agreement after covert movement or a simpler Agree relation holding between the Agr_o head and a c-commanded DP), there is agreement for φ-features between this head and an argument DP. Where the object marker appears pronominal, this agreement could be with a φ-feature-rich *pro*. Coming back to the matter of *zvi*, the question is whether *zvi* is a morpheme which works on the valence of its predicate, or it is a marker of agreement along the lines of an object marker. Before answering this question, I will turn to a description of the Shona reciprocal.

Reciprocity in Shona is expressed using the morpheme *an* which, unlike the reflexive, appears to the right of the verb root:

(7) a. Ta-ka-nzw-an-a.
SUBJ.1ST.PL-REM.PST-hear-RECIP-FV
'We heard each other.'
b. Imbwa dza-ka-won-an-a.
dog.CL10 SUBJ.10-REM.PST-see-RECIP-FV
'The dogs saw each other.'
c. Calisto na Shingi va-ka-won-an-a.
Calisto ASSOC Shingi SUBJ.2-REM.PST-see-RECIP-FV
'Calisto and Shingi saw each other.'

Like the reflexive, there is no apparent alteration in the form of the reciprocal based on φ-features. The most striking distinction between the reflexive and the reciprocal is, of course, the positioning of the morphemes. The domain to the right of the verb root in Shona (and Bantu languages generally) is reserved for verbal extensions which generally increase or decrease the valence of a given predicate:

(8) a. Shingi a-ka-bik-ir-a Mufaro mbudzi.
Shingi SUBJ.1-REM.PST-cook-APPL-FV Mufaro goat.9
'Shingi cooked the goat for Mufaro.'
b. Shingi a-ka-pis-is-a Mufaro mbudzi.
Shingi SUBJ.1-REM.PST-burn-CAUS-FV Mufaro goat.9
'Shingi caused Mufaro to burn the goat.'
c. Mu-riyo wa-ka-pis-w-a (na Shingi).
CL3-vegetables SUBJ.1-REM.PST-burn-PASS-FV by Shingi
'Vegetables were burnt (by Shingi).'

The examples in (8) illustrate, respectively, the applicative, causative, and passive morphemes of Shona. The first two of these add an argument to the predicate, while the last one has the effect of demoting an argument. In this respect, *an* seems to be a natural member of the set of verbal extensions: it reduces the valence of the predicate by one, and it appears in the same morphosyntactic domain as other similar morphemes. Unlike *zvi*, where there are discrepancies in the literature, the treatment of *an* is much more uniform: it is standardly analysed as a valence-changing verbal extension.

As such, the question of maintaining a uniformity of analysis for the reflexive and reciprocal in Shona would seem to hinge upon ignoring the the fact that *zvi* is placed in the position of an object marker, and instead treating it as a verbal extension. This position is not unheard of in the wider Bantu literature, as Creissels (2002) makes a similar argument for a cognate reflexive in Tswana. Certainly, the data does bear some superficial similarity to what was seen in Halkomelem Salish, where both reflexives and reciprocals were expressed through a verbal affix which is insensitive to the φ-features of the "missing" argument. The evaluation of this hypothesis in the face of Shona data is presented in the next section.

3 Arguing the Status of *zvi* and *an*

A number of arguments can be brought to bear on the question of whether or not *zvi* is a valence-changing operator; this section will outline two of these, drawn from Storoshenko (in press). Firstly, there is the question of whether or not the object can still be expressed in the presence of the reflexive. As shown earlier, object DPs can still appear in the same sentence as an agreeing object marker. If *zvi* were an object marker, it should be expected that this duplication is still possible. Conversely, if *zvi* were a morpheme which rendered a predicate intransitive, such duplication should be impossible. With reflexives, however, such examples suffer from the separate issue of seeming redundant. Given that *zvi* would already be repeating the subject, having the full object also present would not only represent an additional repetition of the same referent, but it would also potentially be a Condition C violation, as the subject DP would c-command the object. Problems aside, such examples do not appear to be categorically ruled out:

(9) ? Shingi a-ka-zvi-bik-a Shingi.
Shingi SUBJ.1-REM.PST-REFL-cook-FV Shingi
'Shingi cooked herself.'

As shown in (9), the sentence where *Shingi* appears as both the subject and object co-occuring with *zvi* is judged to be marked, but not categorically ungrammatical. In terms of mitigating the potential Condition C violation, one can again look to information structure. Even a well-studied language such as English is rife with apparent Condition C violations:

(10) John$_i$ hit *John$_i$* . (Not Tom, Dick, or Harry)

This focus construction mitigates the Condition C problem, and it is likely that something similar is at work in (9), as similar constructions in Zulu (Kunene, 1975) are licensed in contrastive focus contexts. Regardless of the information structure facts, the very fact that this construction is even possible in Shona is sufficient for the argument that *zvi* is not a detransitiviser; if it were, then a direct object should be

completely unacceptable in conjunction with *zvi*.

Another argument against the analysis of *zvi* as a detransitiviser is that it does not have the apparent universal characteristics of such morphemes found in other languages, described by Lidz (1996). One such characteristic is the use of what he calls "verbal reflexives", essentially detransitivising morphemes, in decausative constructions where only a theme of a normally transitive verb is expressed. This can be illustrated using Lidz' examples from Imbabura Quechua and Kannada:

(11) a. Imbabura Quechua
pungu-kuna-ka paska-ri-rka.
door-PL-TOP open-REFL-PST.3
'The doors opened.'

b. Kannada
baagil-u mučč-i-koND-itu.
door-NOM close-PP-REFL.PST-3.SM
'The door closed.'

In Shona, the reflexive marker *zvi* does not emerge in similar constructions:

(12) a. Mu-siwo wa-ka-vhar-a.
CL3-door SUBJ.3-REM.PST-close-FV
'The door closed.'

b. Whindo ra-ka-puts-ik-a.
window.5 SUBJ.5-REM.PST-break-STAT-FV
'The window broke.'

In the first sentence, there is no marking on the verb indicating that only one of the arguments is present; the equivalent transitive verb has exactly the same form. In the second case, the stative morpheme *ik* is added to the verb stem. Thus, while Shona appears to have multiple means of expressing this decausitive function, the reflexive *zvi* does not appear among them. Testing these same constructions explicitly using the reflexive resulted in ungrammatical sentences. A second observation made by Lidz is that this kind of morphological reflexivity universally shows up on a transitive predicate where the object is possessed by the subject:

(13) a. Fula
O hett-ike fedenndu.
he cut-REFL.PERF finger
'He cut his finger.'

b. Kannada
hari-yu tann-a angi-yannu hari-du-koND-a.
Hari-NOM self-GEN shirt-ACC tear-PP-REFL.PST-3.SM
'Hari tore his shirt.'

Again, the evidence is that *zvi* does not have this function:

(14) a. Shingi a-ka-won-a ruoko wa Mufaro.
Shingi SUBJ.1-REM.PST-see-FV hand POSS Mufaro
'Shingi saw Mufaro's hand.'

b. Mufaro a-ka-won-a ruoko wa-ke.
Mufaro SUBJ.1-REM.PST-see-FV hand POSS-he
'Mufaro saw his hand.'

c. * Mufaro a-ka-zvi-won-a ruoko wa-ke.
Mufaro SUBJ.1-REM.PST-REFL-see-FV hand POSS-he
'Mufaro saw his hand.'

The first sentence in (14) shows the basic structure for a possessed object. When the object is possessed by the subject, as in the second sentence, the reflexive does not emerge, and is shown to be ungrammatical in the third sentence. Even without the redundant indication of the possessor in the object noun phrase, sentences attempting to use the reflexive in this way are ungrammatical:

(15) * nda-ka-zvi-won-a ruoko.
SUBJ.1ST.SG-REM.PST-REFL-see-FV hand
'I saw myself the hand.'

As shown in (15), even a simple first person sentence is not permissible in this form. Based upon these two tests, it appears that *zvi* does not conform to two universals for verbal reflexives put forth by Lidz. Taken in combination with the observation that objects appear to remain acceptable in reflexive sentences in Shona, it seems safe to conclude that *zvi* is not a detransitivizing morpheme. The logical conclusion then is that *zvi* is indeed a member of the set of object markers.

Turning now to the reciprocal *an,* a different result is obtained when a direct object is present along with the reciprocal morpheme:

(16) * Ta-ka-won-an-a va-rume.
SUBJ.1ST.SG-REM.PST-see-RECIP-FV CL2-man
Lit: "They saw each other the men"

Unlike the reflexive case, the judgement here is categorical; the object is not possible. However, Brauner (1995) notes the following example in conjunction with the reciprocal:

(17) Zimbabwe i-no-ganhur-an-a ne Zambia.
Zimbabwe SUBJ.9-HAB-border-RECIP-FV with Zambia
'Zimbabwe borders on Zambia.'

Here, the reciprocal apparently has a singular subject, indicated by the class 9 agreement on the verb, and Zambia appears post verbally as what Brauner describes as possible object which has been conjoined, making it appear that there is some mechanism for the retention of the object, despite the observation in (16). However, this appears to be a form of split conjunction, as demonstrated by the following sentence pair, which are reported to be synonymous:

(18) a. Imbwa ne mbudzi dza-ka-won-an-a.
dog-CL9 and goat-CL9 SUBJ.10-REM.PST-see-RECIP-FV
'The dog and the goat saw each other.'
b. Imbwa ya-ka-won-an-a ne mbudzi.
dog.CL9 SUBJ.9-REM.PST-see-RECIP-FV and goat.CL9
'The dog and the goat saw each other.'

Here, it appears that the conjunction of *imbwa* and *mbudzi* is splittable, with the conjunction and second conjunct able to be postposed to the end of the sentence. What is more intriguing about this construction is that the subject agreement changes depending on whether the whole conjunction or just the first conjunct appears in the canonical subject position. Where the whole conjoined DP is present, the agreement is a class 10 plural, but when the conjoined DP has been split, the agreement is with the class 9 singular. Clearly, the postposed element in (17) and (18) is not a distinct object, but rather a displaced component of the subject DP. The exact nature of this displacement mechanism is not yet known, and will require further study, but that study is beyond the scope of the present paper. Important here is the fact that sentences such as (17) and (18) cannot be used to argue that a reciprocal sentence with *an* is somehow transitive.

Thus, both *zvi* and *an* behave as expected based upon their position: *zvi* is a pre-verbal object marker, though a unique one, and *an* is a post-verbal valence operator, acting as a detransitivising suffix. This then settles the question posed at the outset of this paper: Shona provides evidence for a language in

which reflexives and reciprocals do not form a syntactic natural class. In the next section of the paper, I go on to provide a more detailed semantic account of the function of these two morphemes.

4 The syntactic and semantic character of *zvi* and *an*

As determined above, *zvi* is a member of the set of object markers in Shona. As such, it is a reflection of an agreement between the Agr_o head and some argument DP. In this case, *zvi* must reflect agreement with some reflexive-like element in an internal argument position, and Agr_o. The analysis presented here will be that the element in the internal argument position of a reflexive sentence is not a *pro*, but rather a phonologically null bound variable. *Zvi*, then is the manifestation of agreement between the Agr_o head and this bound variable.

However, the agreement observed here is not strictly between the Agro head and a bound variable, as demonstrated by (9), where *zvi* occurs in conjunction with a full DP argument. Rather, what *zvi* appears to indicate is the presence of a bound internal argument, be it either overt or covert. Crucial here is the observation that when the class one object marker *mu* is used, it is obligatorily free, and cannot be used to refer to an object bound by a subject:

(19) i-ye$_i$ a-ka-mu-bik-a Shingi$_{*i/j}$.
PRONOUN-3RD.SG SUBJ.1-REM.PST-OBJ.1-cook-FV Shingi
'She cooked Shingi.

Here, where a subject pronoun is in a position to bind the direct object, that binding is judged ungrammatical with the class 1 object marker, where the object marker agrees with a potentially bound object.

The mechanism for the variable binding is quite simple. It is independently argued in Bliss and Storoshenko (2008) that all subjects in Shona undergo an A' movement to the left clausal periphery. This movement creates the necessary operator-variable structure to bind a variable in the argument position, and final evaluation of the semantic form can be carried out along the lines of the Binder Index Evaluation Rule proposed in Büring (2005):

(20) ⟦Shingi akazvibika⟧ = Shingi$_i$ $\lambda x \lambda y$.(y cooked x) (x_i) (t_i)
= Shingi$_i$ (t_i cooked x_i)
= Shingi λx(x cooked x)
= Shingi cooked Shingi

In this manner, reflexive semantic forms are calculated, with *zvi* being an indicator of the presence of a bound object, but not itself carrying any semantic meaning.

Turning to the reciprocal, a substantially different form will need to be proposed. Because *an* operates on the valence of the predicate to which it is attached, its semantic form must be a function which takes a transitive predicate as input and outputs a predicate in which the predicate's valence has been reduced by one place. The following form is proposed, again adapted from Büring (2005):

(21) $⟦\text{an}⟧ = \lambda P_{<e,<e,t>>} \lambda X.[\forall x \sqsubseteq X\,[\forall y \sqsubseteq X \wedge x \neq y\,[P(x)(y)]]]$

This function takes a transitive predicate of type $<e,<e,t>>$, returning an intransitive predicate, taking a plural set as its argument (in the sense of the join-semilattice structure of Link (1983)). Subsets of the plural argument are mapped to the two argument positions of the original transitive predicate, with the caveat that equivalent subsets cannot appear in both positions. This function derives the observation that direct objects are incompatible with the reciprocal; given that *an* requires a transitive predicate as input, this could only be the verb root itself, before combination with any potential internal arguments, as a complement of the verb root would combine semantically with the verb root before *an*, which is an operator outside of VP.

However, *an* can interact with other verbal extensions in Shona. One of these is the applicative *ir*. As described in Bliss (in press), the reciprocal occupies an Appl head, which dominates the VP, and has a

specifier where the applied object (ApplO) appears. This applied object can have a number of different functions, as described by Bliss, but here I am concerned only with cases where the ApplO is a beneficiary, the default case. Again, hearkening back to the Mirror Principle, we can use morpheme order to determine the order in which the operators apply to a predicate:

(22) a. Calisto na Shingi va-ka-bik-ir-an-a ma-nhanga.
Calisto and Shingi SUBJ.2-REM.PST-cook-APPL-RECIP-FV CL6-pumpkin
"Calisto and Shingi cooked pumpkin for each other."
b. * Calisto na Shingi va-ka-bik-an-ir-a.

As shown in (22), there is a fixed order for the combination of the reciprocal and the applicative in Shona. The applicative must precede the reciprocal, meaning that the applicative must compose with the predicate before the reciprocal. A very tentative semantic form for *ir* can be constructed, simply an operator which adds a beneficiary argument to a predicate:

(23) $[\![\text{ir}]\!] = \lambda P\, \lambda x.(P \text{ for } x)$

Given that the order of the combination of morphemes can be determined from the morphology, the calculation of the semantics is a simple matter:

(24) $[\![\text{akabikirana manhanga}]\!] = \lambda x \lambda y\, .(y \text{ cooked } x)\ (\text{pumpkin})$
$= \lambda y\, .(y \text{ cooked pumpkin})$
$= \lambda x \lambda y\, .(y \text{ cooked pumpkin for } x)$
$= \lambda X.[\forall x \sqsubseteq X\, [\forall y \sqsubseteq X \wedge x \neq y\, [y \text{ cooked pumpkin for } x]]]$

As shown, the first combination is of the verb root with the internal argument. Then, the applicative is added, yielding a transitive predicate which can serve as the input for the reciprocal. This fixed order of operations predicts that where a reciprocal is combined with the applicative in this way, the reading can only be that the reciprocal relation holds between the subject and the ApplO, and not with the theme argument. This prediction is borne out in the judgement that sentences with the structure of (22a) are unambiguous, with the only reading being the one predicted: where the reciprocity is between the subject and ApplO. There is nothing in the present semantic formulation which would rule out a derivation where the reciprocal is applied to the a transitive predicate lacking an internal argument, and that predicate being subsequently modified with the applicative. In theory, this should derive the reading where reciprocity holds between the subject and internal argument, for the benefit of an ApplO which could be merged in the normal [Spec, ApplO] position. However, as shown in (22b), this derivation, which would be reflected by the different morpheme order is blocked by what must be a morphosyntactic rather than a semantic rule.

5 Conclusion

This paper began with the question of whether or not reflexives and reciprocals universally form a natural class, as expected under Condition A of the binding theory. It has been argued that Shona provides evidence that reflexives and reciprocals need not form a natural class, as the reflexives in this language can be captured under a binding analysis between DPs, while the reciprocal is a detransitivising operator on a verbal predicate. In developing this argument, a syntactic and semantic analysis of both the reflexive and reciprocal in Shona has been presented. However, in both cases, there are related issues, outside the scope of this paper, which remain unexplored. While it seems clear that the reflexive *zvi* is an object marker in Shona, more work needs to be done on determining the exact character of these object markers. In terms of the reciprocals, the examination of cases where the purported object of a reciprocal sentence is present has uncovered a structure in which elements of a conjoined noun phrase can apparently be discontinuous. Again, these issues are held over for future research.

References

Baker, Mark. 1985. The mirror principle and morphosyntactic explanation. *Linguistic Inquiry* 16:373-415.

Bliss, Heather. in press. Comparing Appl's and oranges: The syntax of Shona applicatives. In *Proceedings of the 39th Annual Conference on African Linguistics*.

Bliss, Heather, and Dennis Ryan Storoshenko. 2008. Passivization and A' movement in Shona. In *Proceedings of the 2008 Annual Conference of the Canadian Linguistics Association*.

Brauner, Siegmund. 1995. *A grammatical sketch of Shona*. Köln, Köppe.

Büring, Daniel. 2005. *Binding theory*. Cambridge University Press.

Chomsky, Noam. 1981. *Lectures on government and binding*. Dordrecht: Foris.

Creissels, Denis. 2001. A typology of subject marker and object marker systems in African languages. In *Proceedings of the International Symposium: Typology of African Languages*.

Creissels, Denis. 2002. Valence verbale et voix en Tswana. *Bulletin de la Société de Linguistique de Paris* 97:371–426.

Fortune, George. 1973. *Transitivity in Shona*. Department of African Languages, University of Rhodesia.

Gerdts, Donna B. 2000. Combinatory restrictions on Halkomelem reflexives and reciprocals. In *Reciprocals forms and functions*, ed. Zygmunt Frajzyngier and Traci S. Curl, 133–160. John Benjamins Publishing Company.

Kunene, Euphrasia. 1975. Zulu pronouns and the structure of discourse. *Studies in African Linguistics* 6:171–183.

Lidz, Jeffrey. 1996. Dimensions of reflexivity. Doctoral Dissertation, University of Delaware.

Storoshenko, Dennis Ryan. in press. Investigating the Shona reflexive *zvi*. In *Proceedings of the 39th Annual Conference on African Linguistics*.

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An information structure approach to the Chinese modifying constituent

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This paper argues that topic and focus layers exist in Chinese DPs, based on the non-canonical NP-Num-CL order and the existence of a phenomenon called topic-drop proposed by Huang (1984) which occurs in Chinese DPs. The existence of a DP left periphery allows for a new perspective to analyze modifying clause structure in Chinese. It is argued that a reworked version of den Dikken's (2004) predicate inversion analysis will accommodate our data which shows that information structure determines whether a modifying constituent will raise to position A ([spec, DFocusP]) or stay in position B ([spec, *n*P]). If the EPP in Dfocus drives movement of a modifying constituent in [spec, *n*P] to [spec, DFocusP], then the modifying constituent will receive contrastive and focused interpretations in pragmatics. Our analysis of Chinese modifying constituents shows that the nominal domain contains topic and focus layers, which is evidence for a split-D in Chinese.

1 Topic within DP

It is known that the canonical order of a nominal phrase (Num-Cl-NP) can be changed to NP-Num-Cl. (1a-b) illustrate such cases.[1]

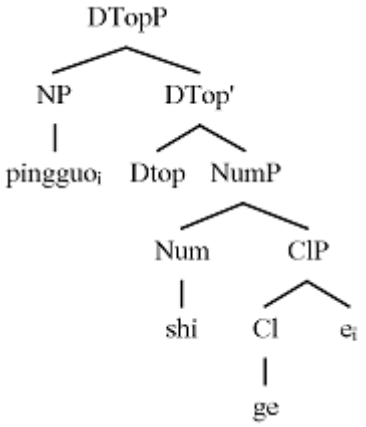
(1) Mandarin
a. ta mai-le bi shi zhi.
He buy-ASP pen ten CL
'He bought ten pens.'
b. Zhangsan chi le pingguo shi ge, lizi qi ge, xiangjiao wu tiao…
Zhangsan eat ASP apple ten CL pear seven CL banana five CL
'Zhangsan ate ten apples, seven pears, five bananas, etc.'

I argue that *pingguo* in (1b) occupies [spec, DTopicP], resulting in an interpretation similar to aboutness topic in the clausal domain. Throughout this work, we assume that these DP-internal topics are base-generated at [spec, DTopP][2].

(2)

[1] Tang (1996) proposes a non-movement analysis to account for (1). Her analysis assumes that *bi* is an argument NP adjoined to V, and a lower argument QP *shizhi* is predicated on the argument NP. Please see Lin (2008) for arguments against the non-movement analysis.

[2] As I will show immediately, this is different from Lin's (2008) proposal which suggests that topic-NPs are moved to [spec, DTopP]. Theoretically, I do not see any immediate problems for adopting the movement approach. However, the base-generation approach will keep my analyses coherent across the board when we consider topic-drop within DP.



1.1 DP topic and CP topic

In Lin (2008), it is argued that topicalization in the DP licenses topicalization[3] in the CP domain, as in (3):

(3) Mandarin

bi	Zhangsan	mai	le	shi	zhi
pen	Zhangsan	buy	ASP	ten	CL

'As for pens, Zhangsan bought ten.' (= 4 in Lin 2008)

This type of construction has been argued by Tang (1996) to be base-generation of the NP in [spec, CP] and this NP binds the null noun dominated by ClP in the nominal domain. However, Wu (1998) has shown that island effects are observed in topicalization of NP in the clausal domain, as shown in (4a-b):

(4) Mandarin

a.

*bi$_i$	Lisi	juede	bu	gaoxing	yinwei	Zhangsan	mai	le
pen	Lisi	feel	not	happy	because	Zhangsan	buy	ASP
shi	zhi	t_i						
ten	CL							

'Lisi felt unhappy because Zhangsan bought ten pens.' (Wu 1998)

b.

*bi$_i$	Lisi	bu	xiangxin	Zhangsan	mai	le	ten	CL	
pen	Lisi	NEG	believe	Zhangsan	buy	ASP	shi	zhi	t_i
de	shuofa								
DE	claim								

'Lisi doesn't believe the claim that Zhangsan bought ten pens.' (Wu 1998)

In (4a-b), the topic fails to bind the null noun in an adjunct island and a complex NP island respectively, which is unexpected if the NPs are base-generated at [spec, CP] and bind the null nouns in both sentences. This may suggest that contra Tang (1996), the NP ends up at [spec, TopicP] in the clausal domain by movement, and since movement out of islands is not possible, the ungrammaticality of (4a-b) can be explained. Notice that the base-generation approach does not predict the ungrammaticality of (4a-b).

If the DP internal topic is moved to [spec, CP] successive cyclically, this would predict that it will stop at the edge of *v*P. Lin shows that this prediction is in fact borne out with an example like (5), represented as (6). In (6), the DP topic at [spec, DTopP] moves out of the DP and stops at [spec, vP] to check the edge feature in v, resulting in example (5). However, if DTop also has an edge feature, the NP will end up in [spec, DTopP], resulting in the example in (3).

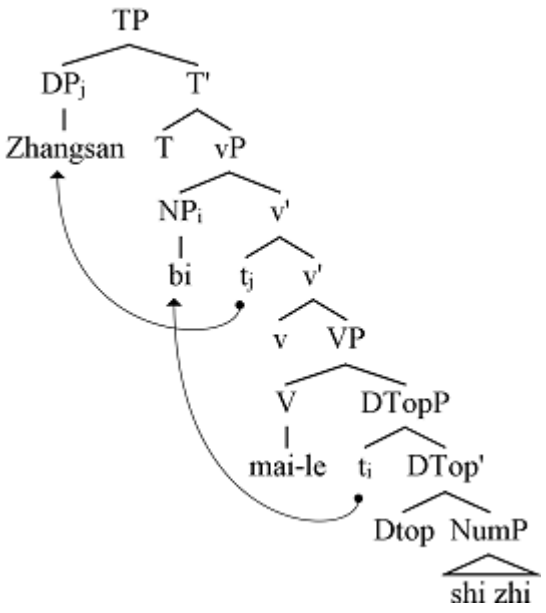
[3] Lin proposes that if some element is topicalized in the DP, that very same element can later be topicalized in the CP.

(5) Mandarin

Zhangsan	bi	mai	le	shi	zhi
Zhangsan	pen	buy	ASP	ten	CL

'Zhangsan bought ten pens.'

(6)



(=12 in Lin 2008)

1.2 Topic-drop within DP

Further evidence for a topic position and topic movement in DP comes from a phenomenon called Topic-drop, which was first proposed in Huang (1984) to account for empty pronouns in the CP. It is observed by Huang that "cool" (discourse-oriented) languages like Chinese allow a relatively free distribution of empty pronouns. Huang proposed a parameter exclusive to discourse-oriented languages, which he terms "topic-drop". He argues that there is a base-generated empty topic binding the empty category in (7):

(7) Mandarin

[Top e_i], [Zhangsan	shuo [	Lisi	bu	renshi	e_i]]	
Zhangsan	say	Lisi	not	know		

'*[Him$_i$], Zhangsan said that Lisi didn't know e_i.' [= (34) in Huang 1984a]

The embedded object empty category may refer to someone in the discourse as in (7), or be coindexed with an overt topic, as in (8):

(8) Mandarin

neige	ren$_i$,	Zhangsan	shuo	[Lisi	bu	renshi e_i]
that	man	Zhangsan	say	Lisi	not	know

'That man$_i$, Zhangsan said Lisi didn't know e_i.' [= (31) in Huang 1984a]

(8) is only grammatical when the empty category is coindexed with a topic, but not the matrix subject. Therefore, we do have solid evidence for the existence of a zero topic in (7). This zero topic, according to Huang, will be co-indexed with an appropriate preceding topic at LF' (discourse grammar), a module following LF. Hence, the zero topic will receive an interpretation in the discourse grammar. Building on Huang's proposal, I will show that topic-drop is not a phenomenon exclusive to CP, but it

applies to DP as well. Examples are given in (9) to illustrate this point.

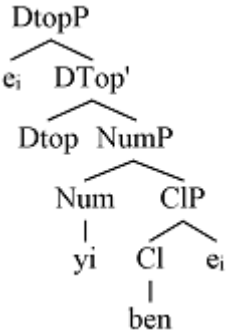
(9) Mandarin

a. Laoban, gei wo $_{DP}$[yi ben] (at a bookstore, pointing at a book)
Shopkeeper give me one CL
'Shopkeeper, give me one (of those books).'

b. A: ni yao youqu de shu hai shi chenmen
you want interesting DE books or COP boring
de shu?
DE books
'Do you want interesting books or boring books?'
B: Wo yao $_{DP}$[youqu de]!
I want interesting DE
'I want the interesting ones.'

In (9a), the head noun is missing in the nominal phrase, which only contains a numeral and a classifier. Following Tang (1990) and Cheng and Sybesma (1999), the classifier head should select an NP in the structure. In the response of speaker B in (9b), the head noun is also missing from the nominal, which only contains a modifying constituent *youqu de* 'interesting' in the phonetic form. Also, the missing NPs can only be missing when it is known in the discourse. This is especially clear in (9a), in which the classifier *ben* which is exclusively used for book-type things is used. This indicates some kind of semantic agreement. I therefore argue that the missing NP in (9a-b) can also be treated as a case of Topic-drop. With the split-DP system, a base-generated empty topic can also occupy [spec, DTopP] and identify with a null head noun. (9a), for example, can be represented as (10):

(10)



One alternative is to adopt Lin's view that that the DP topic licenses the CP topic. The DP topic will move to the CP left periphery to bind the empty category within the DP. This will be even more similar in spirit to Huang's original proposal.

2 Information structure and Chinese modifying constituents

In this section, we extend the split-DP analysis to the structure of modifying constituents, which is a highly controversial issue in the literature of Chinese syntax.[4] I will claim that the Chinese DP contains not only a DTopP, but also a DFocP.

Modifying constituents are phrasal units which act as modifiers in the nominal domain. The term 'modifying constituent' covers four types of constituents: possessor, relative clause, adjective phrase, and noun-complement clause, as shown in (11a-d).

(11) Mandarin

[4] See Den Dikken and Singhapreecha (2004), Pan and Hu (2003), Simpson (2001, 2003), and Tang (2007) for the different analyses of Chinese modifying constituents.

a. wo de shu → Possessor
my DE book
'my book'

b. wo mai de shu → Relative clause
I buy DE book
'The book I bought'

c. youqu de shu → Adjective phrase
interesting DE book

d. Zhangsan da Lisi de xiaoxi → Noun-complement clause
Zhangsan hit Lisi DE news
'The news that Zhangsan hit Lisi'

In Chinese, modifying constituents mainly occur in two different positions, as shown in (12) below:

(12) Mandarin

a. [ta mai de] nei ben shu → POSITION A (+contrastive)
He bought DE DEM CL book
'The book that he bought'

b. nei ben [ta mai de] shu → POSITION B (+attributive)
DEM CL he bought DE book
'The book that he bought'

In (12a-b), the modifying constituents are within the bracketed portions which contain the modification marker *de*. For ease of exposition, we can say that a modifying constituent occurs in position A when it appears before a demonstrative and position B when it appears between the classifier and the head noun. The difference between modifying constituents in position A and modifying constituents in Position B lies in constrastiveness. In the presence of a demonstrative, a modifying constituent in position B is definite, attributive, but not contrastive; however, a relative clause in position A is definite and contrastive.

2.1 Ordering restrictions between the four types of constituents

It is also theoretically possible for the four types of constituents to co-occur[5]. There are no ordering restrictions between adjective phrases and relative clauses, as shown in (13).

(13) Mandarin

a. [Zhangsan mai de] [youqu de] xiaoshuo
Zhangsan buy DE interesting DE novel
'The interesting novel that Zhangsan bought'

b. [youqu de] [Zhangsan mai de] xiaoshuo
interesting DE Zhangsan mai DE novel
'The interesting novel that Zhangsan bought'

However, ordering restrictions among possessors, relative clause/adjective phrases and complement clauses certainly exist. In Chinese, noun-complement clauses must be directly adjacent to the noun in Position B or directly adjacent to the demonstrative in position A, as shown in (14). Nothing can appear in between.

(14) Mandarin

[5] However, it is almost impossible to see all four types modifying the same noun in written or spoken speech because the nominal phrase would be exceedingly long and it might be difficult to parse.

a. [wo tingdao de] **[Zhangsan da Lisi de]** (nei ge) xiaoxi
I heard DE Zhangsan hit Lisi DE DEM CL
news
'The news that Zhangsan hit Lisi which I heard'

b. *[Zhangsan da Lisi de] **[wo tingdao de]** (nei ge) xiaoxi

Relative clauses or adjective phrases must appear after possessors, as shown in the following:

(15) Mandarin

a. [wo de] [piaoliang de] meimei
my DE pretty DE little-sister
'My pretty little sister'

b. *[piaoliang de] [wo de] meimei

c. [wo de] [ai chi tangguo de] meimei
my DE love eat candy DE sister
'My sister who loves eating candy'

d. *[ai chi tangguo de] [wo de] meimei

Therefore, the data in (13-15) suggest that there are no ordering restrictions between relative clauses and adjective phrases. However, if all four types of modifying constituents were to occur in the same nominal phrase, the Possessor must appear before the relative clause and the adjective phrase, which in turn are followed by the noun-complement clause, giving the order in (16), which is is in line with the order proposed in Pan and Hu (2003).

(16) Possessor-Adjective phrase/Relative Clause-Noun complement Clause-N

2.2 Den Dikken's predicate inversion analysis for relative clause

Before I present my own analysis, which is a modified version of Den Dikken's Predicate inversion analysis, I need to provide a brief summary of Den Dikken's original proposal. Den Dikken (2004) proposes a predicate-inversion analysis to explain the distribution of linkers cross-linguistically. He treats the Mandarin *de* as a linker, a meaningless element which is argued to be also present in languages like English[6], French, and Thai. The main proposal of the predicate-inversion analysis is that modifying constituents are predicates of DP-internal small clauses which will raise and cross over their subjects (subjects of the small clauses). (17) is the derivation of *hao de shu* 'good book' in Chinese.

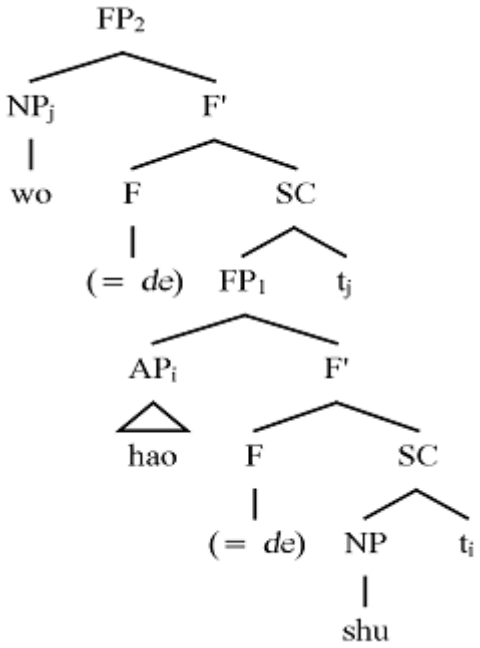
(17) $[_{DP}$ D (…) $[_{FP}$ $[_{AP}$ hao$]_i$ [F (= *de*) $[_{SC}[_{NP}$ shu] $t_i]]]]]$ (=48 in den Dikken 2004)

The small clause $_{SC}[[_{NP}$ shu] $[_{AP}$ hao]] is generated first. The subject (the element that will be crossed over by the predicate) is the NP *shu* and the predicate is the AP *hao*. Inversion occurs in the predicate-inversion domain FP[7]. As inversion occurs, the linker will concomitantly spell out as a reflex of the operation. The inverted predicate will land in [spec, FP], and the feature bundle in F will spell out as the linker. This analysis is powerful on several grounds. First, it accounts for the distribution of *de*. Second, once predicate inversion has taken place and FP (site of predicate inversion) is created, the newly formed FP can be the subject of another predicate through external merge and a new small clause will be formed, so that predicate-inversion can happen again, as in *wo de hao de shu* 'my good book' in (18):

(18)

[6] The italicized element in (i) is a DP linker in English:
(i) That idiot *of* a doctor

[7] We will have to assume that F has an unchecked EPP feature which drives the movement of the predicate.



In (18), the small clause contains the subject NP and the predicate AP. Predicate inversion of the AP takes place first, creating FP and spelling out F as *de*. This FP can then serve as the subject of another small clause which contains the predicate NP *wo* '*my*', and the EPP feature on F will once again trigger predicate inversion of the possessor NP, resulting in (18). Third, according to den Dikken (2006), the subject of a small clause can be any subconstituent within the nominal phrase as long as it is smaller than or equal to a NumP, as shown *hao de yi ben shu* '*one good book*' in (19).

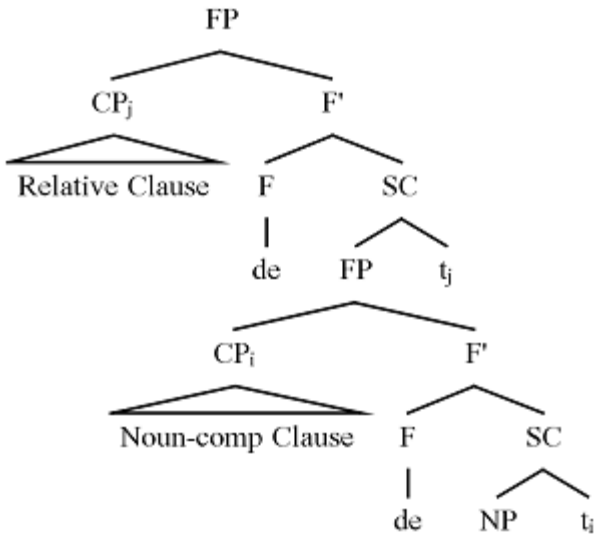
(19) $[_{DP}$ D (…) $[_{FP}$ $[_{AP}$ hao$]_i$ [F (= *de*) $[_{SC}[_{NumP}$ yi ben shu] $t_i]]]]]$

In (19), the subject of the small clause is a NumP (Num-Cl-NP). However, the subject cannot be any bigger than NumP. Den Dikken maintains that a predicate relation can never happen between a DP subject and something else within a DP, which unfortunately means that position A modifying constituents cannot be generated by this analysis. For example, *hao de na yi ben shu '*That one good book*'*, as shown in (20) below, is a perfectly grammatical structure. In this case, the subject of the small clause will be a DP (demonstrative-numeral-classifier-noun sequence) *na yi ben shu* 'That one book' and the AP predicate will cross over it.

(20) $_{FP}$[[hao]i [F (= *de*)$[_{SC}$ $[_{DP}$ na yi ben shu] $t_i]]]$

However, this derivation is not allowed in den Dikken (2004, 2006), as the subject of the small clause is larger than a NumP. As for the ordering restrictions between the different types of modifying constituents, den Dikken maintains that the subject of a noun-complement clause predicate is always an NP. While a relative clause, AP, or possessor can maintain a predication relation with a subconstituent that is smaller than or equal to a NumP, a noun-complement clause can only have a predication relation with a NP, as shown in (21).

(21)



Therefore, predicate inversion of noun-complement clause is expected to take place first before possessors, APs, and relative clauses. There are several problems with the analysis. First, the ordering between possessors and APs/RCs is left unexplained. Second, this analysis only generates position B modifying constituents, nothing has been said about position A modifying constituents.[8] For example, if a noun-complement clause is created by applying predicate inversion to a small clause with an NP subject and a noun-complement clause CP, then it is not clear why (22) can be grammatical. In (20), the noun-complement clause predicate of the small clause crosses a DP (Dem-Cl-NP), not an NP.

(22) Mandarin

[Zhangsan	da	Lisi	de]	nei	ge	xiaoxi
Zhangsan	hit	Lisi	DE	DEM	CL	news

'The news that Zhangsan hit Lisi'

Nevertheless, I argue that a slight modification of the predicate-inversion analysis can be done to capture the wide range of data we have.

3 The current proposal

The current proposal is a reworked version of den Dikken (2004). Contrary to den Dikken, who proposes that FP is the site for predicate inversion and that any subconstituent smaller than NumP can serve as the subject of a small clause, I put forth the proposal that *n*P is the site for predicate-inversion, and as a consequence, only *n*P and NP are allowed to serve as the subject of a small clause and merge with predicates. This modification will force predicate-inversion to happen really low in the structure. Consider (23), represented as (24):

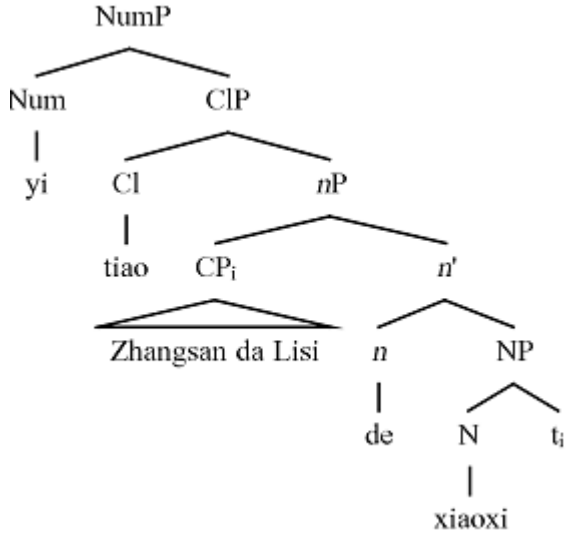
(23) Mandarin

yi	tiao	[Zhangsan	da	Lisi	de]	xiaoxi
one	CL	Zhangsan	hit	Lisi	de	news

'one piece of news that Zhangsan hit Lisi'

[8] In fact, the present analysis simply cannot generate position A modifiers since DPs cannot be subject of a small clause.

(24)



Contrary to den Dikken, I assume that noun-complement clauses are complements of Ns, as opposed to CPs which have a predication relation with an NP as proposed in den Dikken (2004). I follow den Dikken's logic and propose that *n* spells out as *de* when its specifier is filled. However, I also add that *de* is a clitic element which will be cliticized with its specifier once it is spelled out. This is an important change which we will return to shortly. I propose that there are two types of *n*, the RC/AP/noun-complement clause-taking *n* and the genitive case assigning n_{gen}[9]. Instead of being driven to [spec, *n*] by predicate-inversion, possessive NPs are based-merged into [spec, n_{gen}] in order to be assigned genitive case and be semantically interpreted as possessors. Since the specifier of n_{gen} can only be filled by possessors, it will ensure that a possessor will always precede other types of clauses, which is consistent with the order of modifying constituents given in (16).

3.1 Modifying constituents in position A

Since *n*P is the only site of predicate inversion and it would only generate modifying constituents in position B, I argue that we can only generate a modifying constituent in position A by further movement. Evidence for a movement analysis comes from the fact that when position A modifying constituents and position B modifying constituents coexist, the order of modifying constituents in (16), repeated below as (25), is still respected.

(25) Possessor-Adjective phrase/Relative Clause-Noun complement Clause-N

When a noun-complement clause appears in position A, a relative clause cannot appear in position B, as in (26a), to be compared with the grammatical (26b).

(26) Mandarin

a.	*[Zhangsan	piping	Lisi	de]	na	ge	[wo	tingdao	de]	xiaoxi
	Zhangsan	criticize	Lisi	DE	DEM	CL	I	hear	DE	news
	Intended meaning: 'The news I heard that Zhangsan criticized Lisi.'									
b.	wo	tingdao	de	Zhangsan	piping	Lisi	de	xiaoxi		
	I	hear	DE	Zhangsan	criticize	Lisi	DE	news		
	'The news I heard that Zhangsan criticized Lisi.'									

When a relative clause is in position A, as in (27b), a possessor is not allowed in position B.

[9] This is inspired by Ritter (1991)'s hypothesis that construct state NPs are headed by D_{gen}, an abstract case assigner. The definite article as DET in her analysis does not assign genitive case.

(27) Mandarin

a.	[wo	de]	nei	ge	[ai	chi	tangguo	de]	meimei
	I	DE	DEM	CL	love	eat	candy	DE	sister

'That sister of mine who loves eating candy'

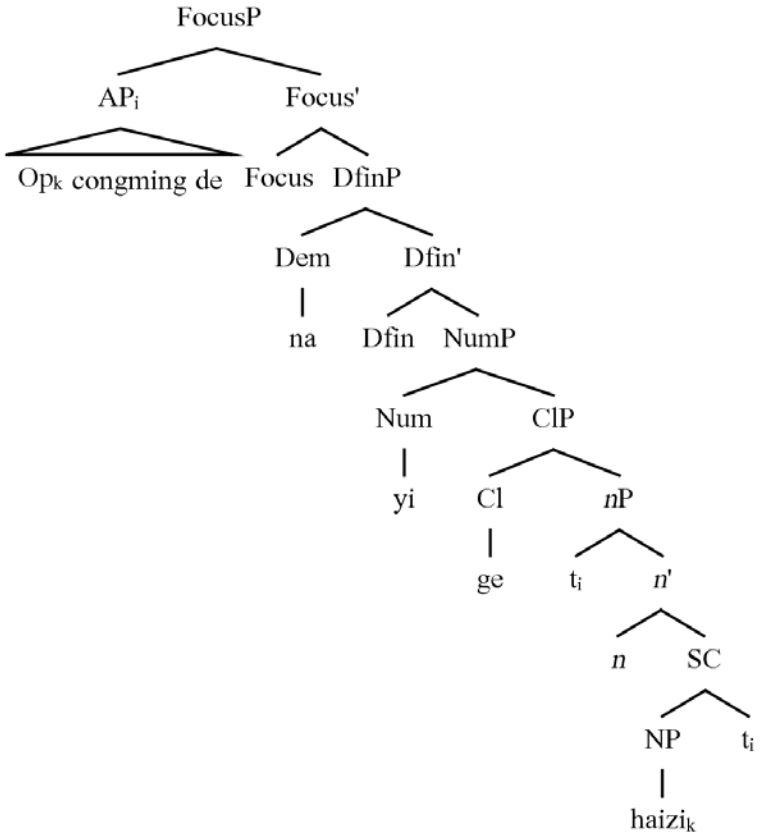
b. *[ai chi tangguo de] nei ge [wo de] meimei

In light of the fact that modifying constituents in position A are necessarily contrastive, it seems intuitive that the movement from position B to position A is caused by focus movement. I assume that the EPP feature in the focus head will trigger movement of the highest[10] modifying constituent. This forces movement of modifying constituents from position B [spec, *n*P] to [spec, FocusP], as shown in (28):

(28)

congming	de	na	yi	ge	haizi	
clever	DE	DEM	one	CL	child	

'The child that is clever'



As shown in (28), AP moves to *n*P first because of predicate-inversion, *n* gets spelled out as *de* as its specifier is filled. When the EPP in the Focus head triggers the movement of the modifying constituent, AP_i moves from [spec, *n*P] to [spec, FocusP]. Since each *n*P is a proposition that has a subject and a predicate, I argue that *n*P is a phase according to Chomsky (2005) or a spell-out domain, according to Fox and Pesetsky (2005). Recall that I mentioned earlier that *de* is cliticized with the modifier in the specifier of *n*P, which is why *de* is now attached to its host.

[10] When only one modifying constituent in position B moves, then it is always the highest one. However, it is also possible to move all the modifying constituents in position B to position A, as long as the correct order is maintained.

We now concern ourselves with the details of how multiple modifying constituents can be moved to position A from position B. I adopt Fox and Pesetsky's (2005) Cyclic Linearization approach to movement. This approach does not adopt the idea of phases proposed in Chomsky (2005) even though vP and CP are still considered to be spell-out domains. Spell-out domains are different from phases in that a spell-out domain is transferred to phonology for linearization, but the concept of phase assumes that there is a phase edge for elements to be moved to and the complement of the phase head will be spelled out. F&P (2005) proposes that at the end of each spell-out domain, the order of the elements is recorded in the phonology. This order is to be preserved in the next spell-out domain, thus the order of the elements in a new spell-out domain cannot contradict the order recorded before. In the same vein, I assume that nPs and DPs are spell-out domains, where the order of elements is recorded.

The analysis predicts that if elements X, Y, Z are to move, the order between X, Y, Z must be preserved and none of the movements should cause any linearization violation with the other elements in the structure. In our case, F&P's analysis correctly predicts that if we have a relative clause and a noun-complement clause in position B, we can either just move the relative clause to position A, or move both to position A. We cannot, however, only move the noun-complement clause to position A, giving rise to the string in (29), as this would contradict the previous relative clause>noun-complement clause order established at the *n*P spell-out domain.

(29) Mandarin

*Zhangsan	da	Lisi	de	na	tiao	wo	tingdao	de	xiaoxi
Zhangsan	hit	Lisi	DE	DEM	CL	I	heard	DE	news

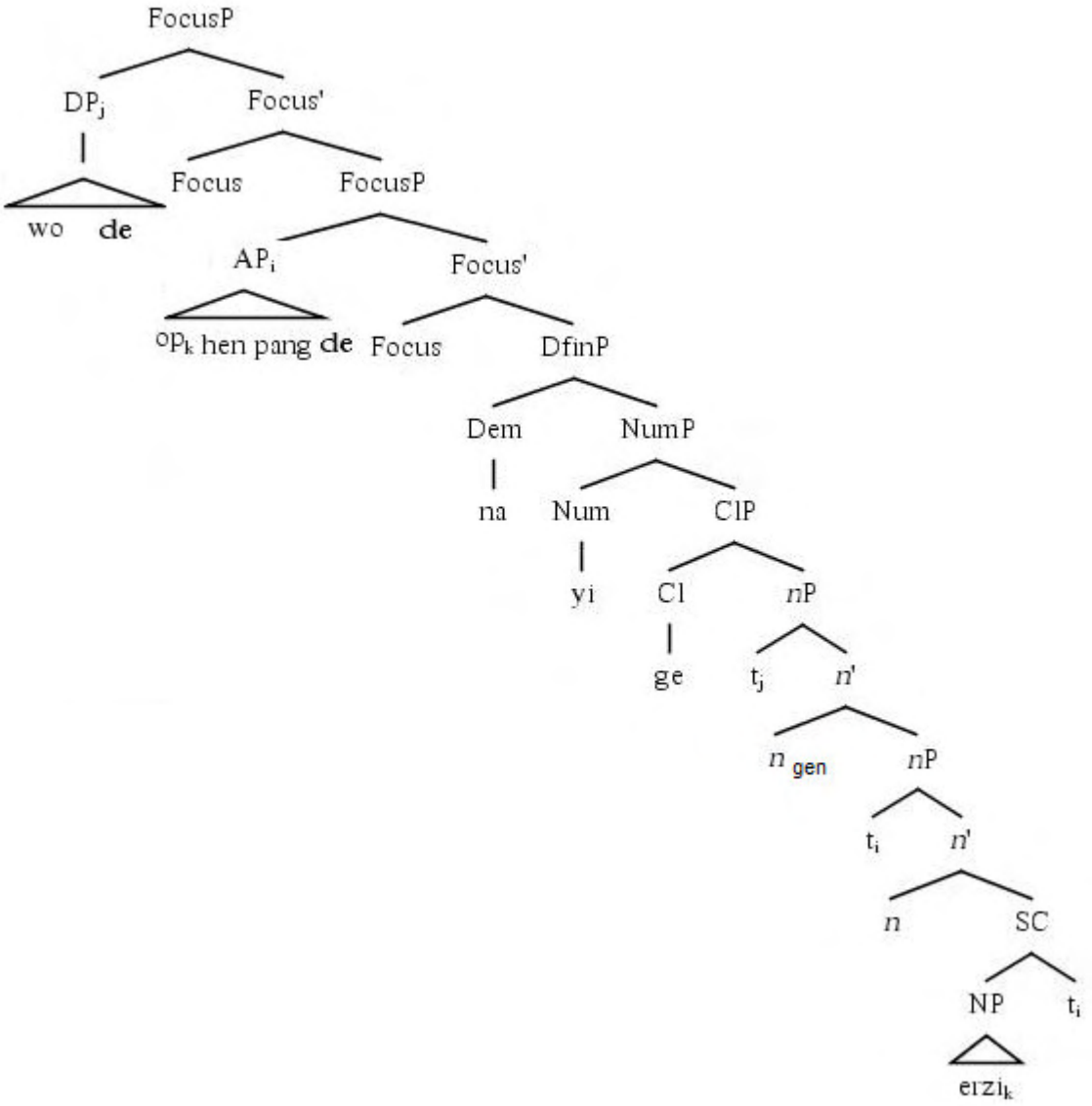
'The news that Zhangsan hit Lisi that I heard.'

Therefore, the analysis predicts that if at position B, we have two modifying constituents in the order of possessor > RC, then this order must still be kept when both of them move to position A, as illustrated in (30):

(30) Mandarin

wo	de	hen	pang	de	na	yi	ge	erzi
I	DE	very	fat	DE	DEM	one	CL	son

'That very fat son of mine (as opposed to my other sons)'



4 Conclusion

In this paper, I argued that topic and focus layers exist in the Chinese DP, based on the non-canonical NP-Num-CL order and the existence of a phenomenon called topic-drop proposed by Huang (1984) which occurs within the Chinese DP. The existence of a DP left periphery allows us to analyze modifying clause structure in Chinese from a new perspective. It is argued that a reworked version of den Dikken's predicate inversion analysis will accommodate our data which shows that information structure determines whether a modifying constituent will raise to position A ([spec, DFocusP]) or stay in position B ([spec, *n*P]). If the EPP in Dfocus drives movement of a modifying constituent in [spec, *n*P] to [spec, DFocusP], then the modifying constituent will receive pragmatically contrastive and focused interpretations. Previous analyses (Aboh 2004, Haegeman 2004, Ntelitheos 2004) have argued for a left-periphery in the DP for other languages. Although Chinese does not have overt determiners, one can still argue for the existence of D if some function of D shared by DPs in other languages is exhibited in Chinese. Our analysis of the Chinese modifying clause structure therefore strengthens the claim that Chinese argument nominals are indeed DPs.

References

Aboh, Enoch. 2004. Topic and focus within D. *Linguistics in the Netherlands* 21. 1-12.
Cheng, Lisa L.-S. & Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30(4). 509–542.
Dikken, M. den and Pornsiri Singhapreecha. 2004. Complex noun phrases and linkers. *Syntax 7: 1-54*.
Dikken, M. den. 2006. *Relators and linkers: The syntax of predication, Predicate Inversion, and copulas*. Cambridge, MA: MIT Press.
Fox, D., and D. Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31:1-46.
Haegeman, Liliane. 2004. 'DP periphery and clausal periphery: possessor doubling in West Flemish? Relating nominal periphery to clausal periphery' in D. Adger, C. de Cat & G. Tsoulas. (edd.) *Peripheries.* Dordrecht: Kluwer, 211-23.
Huang, C.-T. James. 1984. On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15: 531-574.
Lin, Y.-A. The Topic that Gradually Ran Away From Home. In Manghyu Pak (ed.), *Current Issues in Unity and Diversity of Languages: Proceedings of the 18th International Congress of Linguists (CIL XVIII)*, 933-952. Seoul, South Korea: Dongnam Publishing Company.
Ntelitheos, Dimitrios. 2004. Syntax of Elliptical and Discontinuous Nominals. Unpublished MA thesis. UCLA.
Pan H.-H., Hu J.-H. 2003 Head Noun Movement, Focus, and Topicalization in Mandarin Chinese, In: Xu, J. Donghong Ji, and Kim Teng Lau (eds.) *Chinese Syntax and Semantics, Singapore*, 2003,119-156
Ritter, Elizabeth. 1991. Two Functional Categories in Noun Phrases: Evidence from Modern Hebrew. In Susan Rothstein, ed. *Syntax and Semantics* 26, *Perspectives on Phrase Structure: Heads and Licensing*. New York: Academic Press, 37-62.
Tang, J. C-C. 1990. *Chinese Phrase Structure and the Extended X' Theory*. Doctoral Dissertation. Cornell University.
Tang, C.-C. Jane. 1996. *ta mai-le bi shizhi* and Chinese phrase structure. *The Bulletin of the Institute of History and Philology* 67(3). 445-502.
Wu, Jianxin. 1998. Topic, floating quantifiers and partitivity. In Pius N. Tamanji & Kiyomi Kusumoto (eds), *Proceedings of North East Linguistic Society 28*, 485-499. Amherst, MA: GLSA, University of Massachusetts, Amherst

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