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FOREWORD

The two volumes presented here represent 35 of the talks and posters presented at the 43rd Annual Meeting of the Berkeley Linguistics Society, held in Berkeley, California from February 3-5, 2017. The conference included a General Session, a Special Session on Language Contact, a Parasession on Languages of the Americas, and an Undergraduate Poster Session. Papers presented in the General Session, Special Session, and Parasession are contained in Volume 1 and are grouped by the session in which the paper was presented. Short papers and digital copies of posters presented at the Undergraduate Poster Session are presented in Volume 2.

The 43rd Annual Meeting of the Berkeley Linguistics Society was organized by the second-year graduate students of the Department of Linguistics at the University of California, Berkeley: Margaret Cychosz, Dmetri Hayes, Tyler Lau, Julia Nee, and Emily Ramirez. The papers in this volume were edited for style by members of the Executive Committee.

The BLS43 Executive Committee
September 2017

Alternation of State in Kabyle Berber

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A contested topic among linguists is the purpose of the distinction between the free state and the construct state in Berber (see e.g. Mettouchi 2015; Guerssel 1992; Ennaji 2001). In Kabyle Berber, nominals may appear in the free state (1a, 2a); or construct state (1b, 2b). Free state nominals are characterized by the presence of the prefix *a-*. Construct state nominals lack this prefix; feminine construct state nouns lack any additional prefix, as in (2b), and masculine construct state nouns are prefixed by the morpheme *w-* (1b).

- | | | | |
|------|---|------|---|
| (1a) | a-qcic
FS-child
'boy' | (1b) | w-qcic
MASC-child.CS
'boy' |
| (2a) | t-a-qcic-t
FEM-FS-child-FEM.Sg
'girl' | (2b) | t-qcic-t
FEM-child.CS-FEM.Sg
'girl' |

I propose that the prefix *a-* is an intrinsic case licenser that occupies K^0 and licenses case to the nominal, much like the augment vowel in Zulu (Halpert 2016). This proposal accounts for the full distribution of free state and construct state nominals and has implications for our understanding of Case.

Nominals in the free state appear as (i) preverbal subjects, (ii) objects of a verb, and (iii) complements of certain so-called prepositions. Nominals in the construct state appear as (i) postverbal subjects and (ii) complements of other prepositions. At first glance, the distributions of the free state and construct state nominals do not form natural classes; as illustrated in (5) and (6), subjects may appear in the free state or construct state, depending on where they appear with respect to the verb. In addition, while some prepositions select free state complements (7), others select construct state complements (8).

- | | | | |
|-----|--|-----|---|
| (5) | a-rgaz y-ecca
FS-man 3M.Sg-ate
'the man has eaten' | (6) | y-ecca wrgaz
3M.Sg-eat man.CS
'the man has eaten' |
| (7) | mebla t-a-yenjajt
without F-FS-spoon
'without a spoon' | (8) | 6er wjdir
to cliff.CS
'to the cliff' |

As the distribution of the free state and the construct state suggest that the distinction is syntactically conditioned, I assume, following Guerssel (1992), that the free state morpheme is a case marker occupying K^0 . Building on insights in Guerssel's (1992) work, as well as Halpert's (2016) analysis of augmented nominals in Zulu, I propose a new account of the state alternation as a difference in the size of the nominal projection. Nominals in the construct state are bare DPs (contra Guerssel 1992) that must receive structural case from elsewhere in the clause, while nominals in the free state are KPs that receive case from an intrinsic licenser, the free state morpheme *a-*. I propose that treating the free state vowel as K^0 accounts for the full distribution of free state and construct state nominals.

This work builds on Guerssel 1992, which sought to explain why one class of prepositions selects free state complements, while another set of prepositions apparently selects construct state complements. According to Guerssel (1992), prepositions that select construct state complements are case markers. Much like the free state prefix, these case markers occupy K. This structure is illustrated in (9).

- (9) *rwel-γ* [_{KP} *γer* [_{DP} *wjdir*]]
 ran-1.SG [*toward* [*cliff.CS*]]
 'I ran toward the cliff' (adapted from Guerssel 1992;180)

Prepositions which select free state complements are true prepositions. This is because they select a full KP complement.

- (10) *rwel-γ* [_{PP} *al* [_{KP} *a-jdir*]]
 ran-1.SG [*until* [*FS-cliff*]]
 'I ran to the cliff' (adapted from Guerssel 1992;180)

Structural evidence for Guerssel's claim comes from selection. According to Guerssel (1992), prepositions may select either a free state nominal, as in (11), or a construct state nominal that has been selected by a case marker, as in (12).

- (11) *rwel-γ* [_{PP} *al* [_{KP} *a-jdir*]]
 ran-1.SG [*until* [*FS-cliff*]]
 'I ran to the cliff' (adapted from Guerssel 1992;180)

- (12) *rwel-γ* [_{PP} *al* [_{KP} *γer* [_{DP} *wjdir*]]]
 ran-1.SG [*until* [*toward* [*cliff.CS*]]]
 'I ran to the cliff' (adapted from Guerssel 1992;180)

This suggests that these two morphemes are performing the same function. I adopt Guerssel's analysis to Kabyle. In addition, I propose that prepositions in Berber do not license Case. Complements of prepositions must be licensed by the free state morpheme *a-*.

An apparent outstanding problem is that preverbal subjects appear in the free state, while postverbal subjects appear in the construct state. I assume, following Shlonsky (1987), that preverbal subjects are base-generated clause externally and coindexed with a pronoun in the (postverbal) subject position. Berber is a pro-drop language, so this pronoun is generally null when the subject is dislocated. I bring new evidence from Kabyle to bear on this claim. Postverbal subjects receive structural case in their base positions, and thus surface in the construct state. Preverbal subjects are generated in a position where they cannot receive structural case. To avoid a case filter violation, they must be licensed via an inserted K^0 (Levin 2015), the free state vowel.

Halpert (2016) claims that case in Zulu is licensed from a projection LP to the highest argument in vP. This is why postverbal subjects in Zulu are augmentless, while objects must be augmented. However, the facts in Kabyle do not suggest the existence of an LP. I propose that Kabyle is different from Zulu in that case licensed from T. This paper proposes that objects surface in the free state because case in Kabyle is not licensed from v. Such a proposal has interesting cross-linguistic implications, as it suggests that Case is not always licensed by v.

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Suppletive passivization of *mac* ‘to be hit’ in Korean

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1 Introduction

This paper will focus on demonstrating that the Korean verb, *mac* ‘to be hit’, is the suppletive passive form of *ttayli* ‘to hit’ within the framework of Distributed Morphology (Halle & Marantz 1993, 1994). With the goal of explaining such suppletive correlation between the two verbs, we will make use of the postsyntactic morphological operation known as fusion.¹ In further pursuit of analyzing the suppletive passivization, this paper will demonstrate that *mac* shows the same syntactic patterns as the *i/hi/li/ki*-type of passive form existing in Korean. Adopting the notion that the morphosyntactic feature, [+pass], is placed under the head, Voice, of VoiceP situated between VP and TP (Park 2010, 2013), we will provide compelling evidence indicating that the syntactic functionalities of *mac* and the *i/hi/li/ki*-type of passive form are identical. Following this string of logic, we will conclusively verify that there exists a morphology-syntax mismatch between *mac* and the *i/hi/li/ki*-type of passive form in the sense that they share identical syntactic patterns and functionalities even though the former undergoes the morphological operation known as fusion whereas the latter does not.

2 Overt passive morphemes & *mac*

Within Korean sentence structures, it is often believed that overt passive morphemes such as *i* and *eci* are attached onto the verbs to indicate passivization. In other words, the insertion of overt passive morphemes is the common way of forming passive sentences in Korean. However, there exist exceptions to this mechanism. When sentences bearing the verb, *ttayli* ‘to hit’, are passivized,

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¹ While the fusion-based approach is adopted in this work, the zero-exponent approach favored by Choi and Harley (2017) will also be taken into consideration in our future research.

no overt passive morphemes appear. Rather, an unpredicted form, *mac*, substitutes the appearance of the predicted forms, *ttayli* and *i* or *ttayli* and *eci*.

- (1) a. Cwunwu-ka Inwu-lul cap-ass-ta
Cwunwu-NOM Inwu-ACC grab-PST-DECL
‘Cwunwu grabbed Inwu.’
- b. Inwu-ka cap-hi-ess-ta
Inwu-NOM grab-PASS-PST-DECL
‘Inwu was grabbed.’
- (2) a. Cwunwu-ka Inwu-lul ttayli-ess-ta
Cwunwu-NOM Inwu-ACC hit-PST-DECL
‘Cwunwu hit Inwu.’
- b. Inwu-ka mac-ass-ta (*ttayli-i/eci-ess-ta)
Inwu-NOM be.hit-PST-DECL
‘Inwu was hit.’

Considering the prevalent idea that head movement is certainly possible in Korean sentence structures, we argue that the suppletive form, *mac*, is inserted in Phonetic Form (PF) after $\sqrt{\text{HIT}}$, which is initially situated under V, and [+pass], which is situated under Voice, undergo the postsyntactic morphological process of fusion proposed in Distributed Morphology (see Halle & Marantz 1993, Chung 2007, 2009). In this sense, during the phase of vocabulary insertion, *mac* is selected as the appropriate vocabulary item for the bundle of morphological features, [$\sqrt{\text{HIT}}$, +pass].

3 Syntactic patterns of *mac*

In further pursuit of analyzing the morphosyntactic characteristics of *mac*, we additionally argue that the given suppletive form behaves identically with the *i/hi/li/ki*-type of passive form in terms of syntax. When the agent-oriented adverb, *ilpwule* ‘intentionally’, is added in passivized sentences containing either *mac* or the *i/hi/li/ki*-type of passive form, they remain grammatical.

- (3) a. Inwu-ka ilpwule cap-hi-ess-ta
Inwu-NOM intentionally grab-PASS-PST-DECL
‘Inwu was intentionally grabbed.’

- b. Inwu-ka ilpwule mac-ass-ta
 Inwu-NOM intentionally be.hit-PST-DECL
 ‘Inwu was intentionally hit.’

Additional evidence for the syntactic similarity of *mac* and the *i/hi/li/ki*-type of passive form can be seen through passivized imperative sentences containing the *e/a la*-type of imperative morpheme used in Korean. Similar to the previous findings, the passivized imperative sentences containing either *mac* or the *i/hi/li/ki*-type of passive form remain grammatical.

- (4) a. Inwu-ya, Cwunwu-eykey cap-hi-ela
 Inwu-VOC Cwunwu-DAT grab-PASS-IMP
 ‘Inwu, be grabbed by Cwunwu.’
 b. Inwu-ya, Cwunwu-eykey mac-ala
 Inwu-VOC Cwunwu-DAT be.hit-IMP
 ‘Inwu, be hit by Cwunwu.’

The parallelism between *mac* and the *i/hi/li/ki*-type of passive form gains further significance when considering the notion that the *e/a ci*-type of passive form existing in Korean behaves differently in terms of syntax. No passivized sentence containing the *e/a ci*-type of passive form allows the agent-oriented adverb, *ilpwule*, or the *e/a la*-type of imperative morpheme to be incorporated within the same sentence structure.

- (5) a. *Inwu-ka ilpwule Sewul-lo ponay-eci-ess-ta
 Inwu-NOM intentionally Sewul-GOAL send-PASS-PST-DECL
 ‘Inwu was intentionally sent to Seoul.’
 b. *Inwu-ya, Sewul-lo ponay-eci-ela
 Inwu-VOC Sewul-GOAL send-PASS-IMP
 ‘Inwu, be sent to Seoul.’

At this point, we postulate that *mac* and the *i/hi/li/ki*-type of passive form are able to coexist with the [+agentive] feature rooted within the agent-oriented adverb and the imperative marker whereas the *e/a ci*-type of passive form cannot. Thus, it can be pointed out that *mac* behaves identically to the *i/hi/li/ki*-type of passive form in terms of syntax whereas the *e/a ci*-type of passive form falls into a different set of category.

4 Conclusion

All in all, we have verified our assumption that the suppletive passive form, *mac*, and the *i/hi/li/ki*-type of passive form behave identically in terms of syntax whereas a clear distinction can be made between the two forms in terms of morphology. In order to present a convincing explanation for this type of morphology-syntax mismatch, we have proven two crucial factors: (i) The morphological structures of *mac* and the *i/hi/li/ki*-type of passive form are dissimilar in the sense that the former undergoes the postsyntactic morphological operation known as fusion whereas the latter does not. (ii) Both *mac* and the *i/hi/li/ki*-type of passive form display the same syntactic patterns in terms of agentivity which lead to a syntactic parallelism between the two forms. In accordance with this string of logic, we have maintained our position that there is a clear morphology-syntax mismatch between the suppletive passive form, *mac*, and the *i/hi/li/ki*-type of passive form by using the mechanisms introduced in Distributed Morphology (Halle & Marantz 1993, 1994).

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Suppletive Passivization of *mac* 'to be hit' in Korean

Minjung Kim
Soo-Ihwan Lee

Introduction

This work will focus on analyzing the Korean verb, *mac* 'to be hit', which is the suppletive passive form of *itayili* 'to hit', within the framework of Distributed Morphology (Halle & Marantz 1993). In addition, we will present the morphology-syntax mismatch between *mac* and the usual *i/hi/li/ki*-type of passive form used in Korean: *mac* and the *i/hi/li/ki*-type of passive form show the same syntactic patterns, whereas they are realized in distinct morphological structures. With the goal of explaining this mismatch, we will provide a postsyntactic morphological operation known as fusion proposed by Halle & Marantz (1993, 1994).

Halle and Marantz (1994)

(A) Syntax

(B) Morphology
(Addition of morphemes, Merger, Fusion, Fission, Impoverishment)

(C) Vocabulary Insertion

(D) Phonological Rules

PF

LF

Postulations

With the attempt of analyzing the changes occurring in (B), (C), and (D) for passive sentence structures in Korean, we adopt the notion that the morphosyntactic feature, [+pass], is placed under the head, Voice, of the maximal projection, VoiceP, which is situated between the maximal projections, VP and TP (Park 2010, 2013). Moreover, we postulate that the head movement, $V \rightarrow \text{Voice} \rightarrow T \rightarrow C$, takes place in active and passive Korean sentence structures alike. Therefore, the syntactic structure of a passive Korean sentence in (A) will generally appear as the one drawn below:

CP

TP

C

VoiceP

T

Voice'

Voice

VP

V'

V

T

C

Voice

T

Voice

T

C

Voice

T

Voice

Assumptions and Evidence

At this point, we recapitulate that the syntactic patterns of the suppletive passive form, *mac*, and the *i/hi/li/ki*-type of passive form are identical, whereas the syntactic patterns of the *e/a ci*-type of passive form fall into a different set of category. Clear evidence for the syntactic distinction in the Korean passive forms can be seen through the use of imperatives. To elaborate, the *i/hi/li/ki*-type of passive form can appear with the Korean imperative marker, *e/a la*, whereas the *e/a ci*-type of passive form cannot. Due to the [+agentive] feature corresponding to the imperative marker, the theme (the receiver of an action) within an imperative passive sentence containing *i/hi/li/ki* may take an active role in causing the action while the theme within an imperative passive sentence containing *e/a ci* may not. Examples (1), (2), (3), and (4) effectively illustrate these points:

The Suppletive Passive Form: *mac*

(1) Inwu-ya, (ney-ka) Cwunwu-cykey mac-ala
Inwu-VOC (2nd Pers. Sg.-NOM) Cwunwu-DAT be-hit-IMP
'Inwu, be hit by Cwunwu.'

mac-ala (be-hit-IMP)

(A) Syntactic Structure and Morphosyntactic Feature Bundles

(B) Morphological Operation(s)

Fusion

(C) Vocabulary Insertion

(D) Application of Phonological Rule(s)

[m ʌ c ʌ l a]

The Passive Form: *i/hi/li/ki*

(2) Inwu-ya, (ney-ka) Cwunwu-cykey cap-hi-ela
Inwu-VOC (2nd Pers. Sg.-NOM) Cwunwu-DAT grab-PASS-IMP
'Inwu, be grabbed by Cwunwu.'

cap-hi-ela (grab-PASS-IMP)¹

(A) Syntactic Structure and Morphosyntactic Feature Bundles

(C) Vocabulary Insertion

(D) Application of Phonological Rule(s)

[c ʌ p h i e l a]

¹ Provided that the receiver of an action is capable of deciding whether to be grabbed by someone else or not with his or her own will, the use of the imperative phrase, *cap-hi-ela*, is certainly possible. For instance, a boy who is playing tag with his peers may say to them, *ayul-a, com cap-hi-ela* 'Guys, just be grabbed (by me)'. Likewise, the imperative phrase, *mac-ala*, is also possible given that the receiver actively participates in allowing the action to be applied to his or her own self.

The Passive Form: *e/a ci*

According to Park (2013), it is possible for the passive form, *e/a ci*, to appear after the verb, *cap*:

Inwu-ka Cwunwu-cyuhay son-i cap-aci-ess-ta
Inwu-NOM Cwunwu-DAT hand-NOM grab-PASS-PST-DECL
'Inwu's hand was grabbed by Cwunwu.'

Nevertheless, the passive form, *e/a ci*, cannot appear with the imperative morpheme, *e/a la*, which corresponds to the [+agentive] feature:

(3) *Inwu-ya, (ney-ka) Cwunwu-cyuhay son-i cap-aci-ela
Inwu-VOC (2nd Pers. Sg.-NOM) Cwunwu-DAT hand-NOM grab-PASS-IMP
'Inwu, have your hand be grabbed by Cwunwu.'

*cap-aci-ela (grab-PASS-IMP)

(A) Syntactic Structure and Morphosyntactic Feature Bundles

(C) Vocabulary Insertion

(D) Application of Phonological Rule(s)

*[c ʌ p ʌ c i e l a]

Moreover, there are certain verbs which only appear with the passive morpheme, *e/a ci*, when passivized. The Korean verb, *ponay* 'to send', is one of them:

Inwu-ka Sewul-lo ponay-eci-ess-ta
Inwu-NOM Seoul-GOAL send-PASS-PST-DECL
'Inwu was sent to Seoul.'

Even so, they cannot appear with the imperative morpheme, *e/a la*, which corresponds to the [+agentive] feature:

(4) *Inwu-ya, (ney-ka) Sewul-lo ponay-eci-ela
Inwu-VOC (2nd Pers. Sg.-NOM) Seoul-GOAL send-PASS-IMP
'Inwu, be sent to Seoul.'

*ponay-eci-ela (send-PASS-IMP)

(A) Syntactic Structure and Morphosyntactic Feature Bundles

(C) Vocabulary Insertion

(D) Application of Phonological Rule(s)

*[p o n a y ʌ c i e l a]

Significant Findings

A Mismatch between Syntax and Morphology

Syntactic Functionalities	<i>mac</i> = <i>i/hi/li/ki</i>
Morphological Forms	<i>mac</i> ≠ <i>i/hi/li/ki</i>

Having realized that both *mac* and *i/hi/li/ki* passive forms display the same syntactic patterns in terms of passivity, we arrive at the finality of this work that the syntactic functionalities of *mac* and *i/hi/li/ki* are identical. As it is equally important to point out, we have also proven that the morphological structures of *mac* and *i/hi/li/ki* passive forms are dissimilar in the sense that the former undergoes the morphological operation known as fusion whereas the latter does not. This, in turn, gives rise to two different morphological forms.

Conclusion

All in all, we have verified our assumption that the suppletive passive form, *mac*, and the *i/hi/li/ki*-type of passive form behave identically in terms of syntax whereas a clear distinction can be made between the two forms in terms of morphology. In accordance with this string of logic, we have maintained our position that there is a clear morphology-syntax mismatch between the suppletive passive form, *mac*, and the *i/hi/li/ki*-type of passive form using the mechanisms introduced in Distributed Morphology.

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9

Japanese Relative Clauses: *no* as a “Puppet” Head Noun

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1 Introduction

It has been traditionally argued that there are three types of relative clauses in Japanese (Tsujimura, 1996). In this paper, I will first detail the three types of relative clauses (RC) and discuss the structure of each. Next, I will provide an alternate analysis and propose that structurally, the internally-headed relative clauses are patterned the same as the externally-headed clauses that do not contain a gap. Ultimately, given supporting evidence, I show that Japanese only has externally-headed clauses. Finally, I will discuss about the functions of *no* that is used to support my argument and provide ideas for further research in this topic.

2 Data and previous literature

Tsujimura (1996) reported that there are three types of relative clauses in Japanese, externally-headed clauses with or without gaps and internally-headed clauses. Despite this general claim, I propose that Japanese actually only has two types of relative clauses. The internally-headed clauses and externally-headed clauses without gaps should be grouped into one type of relative clause because of their similar syntactic structures. I argue that the particle *no* acts as a “puppet” head noun in an internally-headed relative clause.

As discussed in Tsujimura (1996), the first two types of relative clause differ with respect to the presence of an operator (OP). In the externally-headed relative clause in (1), OP is coindexed with the head noun. The second type is an externally-headed clause without gaps. (2) illustrates that this type of relative clause has no motivation for the presence of an OP_i because there is no gap.

(1) Satoo-sensei-ga [gakusei-ga OP_i kaita] ronbun-o_i yondeiru

Prof. Sato-NOM student-NOM OP_i wrote article_i-ACC is.reading

‘Prof. Sato is reading the article_i that the student wrote OP_i.’ (Tsujimura, Ch. 5: EX 259)

- (2) [musuko-ga iede-sita] Taroo
 son-NOM from home ran away Taro
 ‘Taro whose son ran away from home’ (Tsujimura, Ch. 5: EX 270)

I focus on the third type of relative clause: internally-headed clauses where the head noun is inside of the CP as shown in (3).

- (3) Sono omawari-wa [gakuseitai-ga CIA-no supai-o kumihuseta]-no-o utikorosita.
 That cop-TOP students-Nom CIA-Gen spy-Acc hold down-one-Acc shoot/killed
 ‘The cop shot and killed the students who held down the CIA spy.’ **OR**
 ‘The cop shot and killed the CIA spy who the students held down.’ (Ch. 5: EX 275)

Unlike (1) and (2), (3) has more than one interpretation. According to Tsujimura, because internally-headed relative clauses do not have a specific position that the head noun is required to occupy, either “the students” or “the CIA spy” can be construed as the head of the relative clause. However, in the following section, I will provide evidence which suggests that the particle *no* is actually the head of the clause.

3 Alternate proposal and analysis

Tsujimura observes that *no* in (3) translates into “one” and argues that *no* “replaces” the head that is internal to the relative clause. As shown in (3), *no* follows strictly after the verb in an internally-headed clause. I argue that this is because the head noun already occupies a position in the clause itself and thus the “puppet” head noun *no* is placed after the verb in an internally-headed relative clause. Building on Tsujimura’s generalization, I propose that examples (2) and (3) have the same syntactic structure as illustrated in (4) and (5).

- (4) [[[musuko-ga [iede-sita]_{TP}]_{CP} Taroo]_{VP}]_{DP}
 (5) [[[gakuseitai-ga CIA-no supai-o [kumihuseta]_{TP}]_{CP} -no]_{VP} -o utikorosita]_{VP}

The syntactic position of *no* in (3) as shown in example (5) provides evidence against Tsujimura’s general claim that Japanese has three types of RCs. Rather, the pre-verbal particle *no* and *Taroo* occupy the same syntactic position as the head in an externally-headed relative clause without gaps.

Additionally, unlike other heads in externally-headed RCs, *no* can be coindexed with either “the student” or “the spy”. Because it would be ungrammatical to repeat the head noun external to an internally-head relative clause in Japanese, the particle *no* functions as a “puppet” head noun.

Evidence for this proposal comes from Cole (1987). He argues that constructions that appear to be IHRCs in Imbabura and Ancash, two Quechua languages, are actually externally-headed with a phonologically null head. An example below demonstrates this phenomenon,

- (6) [nuna bestya-tai ranti-shqa-n]_{DP} \emptyset_i alli bestya-m ka-rqo-n
 man horse-ACC buy-PER-3 good horse-EVID be-PAST-3
 ‘The horse the man bought was a good horse’ (EX. 1)

While the head in Imbabura and Ancash is null, the head in Japanese is overt. In this section, I have discussed what role *no* can play in Japanese RCs. In the next section, I will illustrate other functions of *no* in Japanese.

4 Functions of *no*

The previously discussed function of *no* is consistent with how *no* behaves in non-relative clause contexts, where this particle has the function of representing nouns.¹ In Japanese, speakers often use *no* to avoid repetition. Specifically, when a noun follows an adjective, and when it is clear what the noun is referring to, the pronoun *no* can replace this noun. An example of this is shown in (7) where *no* in the second statement refers to “the sweater”, which was already stated in the preceding sentence.

- (7) Watashi wa kuro seitaa o motteimasu. Akai no mo motteimasu. (no = seitaa)
 I TOP black sweater Acc have/carry. Red one also have

¹ As an aside, *no* is quite a versatile particle that serves other functions besides avoiding repetition in the language. For example, *no* is used to connect two (and more) nouns. “Takeshi san no denwa bangoo” translates into “Mr. Takeshi’s phone number”. Here, *no* acts like the possessive (x’s) in English. In Japanese, the second noun provides the main idea and first noun makes it more specific. Noted here that the English and Japanese words are arranged in the same order. However, another example such as “Nihongo no gakusee” which means “a student of Japanese” shows that the words need not to be in the same order. In general, Japanese is consistent in the way ideas are arranged, with the main idea always coming at the end, and any further descriptions coming before it.

‘I have a black sweater. I have a red one, too.’ (Banno, Ch 10: EX 3)

Furthermore, a noun following another noun can also be reduced. Here, a sequence of the form “noun₁ no noun₂” will be reduced to “noun₁ no.” Again, Japanese omits the second noun to avoid repetition. *Ka* is the question marker.

- (8) a. Kore wa Sue-san no kaban desu ka
 This TOP Sue GEN bag is Q
 ‘Is this Sue’s bag?’
 b. Iie, sore wa Mary-san no desu.
 No, that TOP Mary ’s is
 ‘No, that is Mary’s.’ (Banno, Ch 10: EX 4)

In this section, I have outlined additional illustrations of *no* taking the place of a noun in Japanese. Going forward, I propose potential further research on IHRCs in Korean.

5 Further research

Based on my proposal for Japanese and Cole’s proposal for Quechua, internally-headed relative clauses do not exist. What has been argued to be internally-headed clauses are actually externally-headed clauses, either with a pronounced or a null head. I would like to explore the degree to which my proposal extends to Korean, which others have argued to also have IHRCs, such as the example below.

- (9) John-un [[khempyu-the-ka kocang-na-n] **kes**]-ul kochi-ess-ta
 John-Top computer-Nom out of order-past(mod) **thing**-Acc fix-past-dec
 ‘John fixed the computer that is out of order.’ (Jo, Ex 7)

According to Jo, the IHRCs in Korean have the structure of a complex NP consisting of a clausal complement and a head noun. This is shown in the example above. Interestingly, it must also be headed by a semantically empty noun *kes*. There have been many debates on the different internal structures of Korean IHRCs because of the structural status of *kes*. Jo (1999) shows that *kes* is a grammatical noun with the feature [N, thing] which functions as clausal nominalizer and that it always occupies head position of [S complement -NP] construction. My goal is to look at

how these IHRC structures are formed based on previous analyses and try to determine whether they are actually IHRCs.

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GOALS

- Illustrate the different types of Japanese relative clauses and the nature of the OP within each one.
- Evaluate Tsujimura's (1996) proposal about internally-headed relative clauses and the particle *no*.
- Propose a new typology of Japanese relative clauses
 - In the current literature, there are internal & external RCs.
 - Proposal: only external RCs

BACKGROUND

- Japanese is a SOV language; the relative clause precedes the head noun.

Tsujimura (1996): three types of relative clauses in Japanese, externally-headed clauses with or without gaps and internally-headed clauses.

- *Externally-headed clauses with gaps*:
 - It has a "gap" internal to them, the equivalent of OP in English relatives clauses.
- *Externally-headed clauses without gaps*:
 - It has no motivation for the presence of an OP.
- *Internally-headed clauses*:
 - The head noun is inside of the clause.
 - Some internally-headed clauses can also have multiple interpretations.

PROPOSAL

- Japanese actually only has externally-headed clauses.
- Structurally, internally-headed clauses and externally-headed clauses without gaps pattern the same and thus should be grouped into one type of externally-headed RC.
- *no* acts a "puppet" head noun

Japanese Relative Clauses: *no* as a "Puppet" Head Noun

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JAPANESE RELATIVE CLAUSES

EXTERNALLY-HEADED CLAUSES

Externally-headed clauses with gaps

- (1) Satoo-sensei-ga [DPgakusei-ga OP_i kaita] ronbun-o_i yondeiru
Prof. Sato-NOM student-NOM OP_i wrote article-ACC is reading
'Prof. Sato is reading the article_i that the student wrote OP_i.' (Tsujimura, Ch. 5: EX 259)

- In (1), "gakusei-ga kaita" has an open spot for the missing object of the writing, OP_i which is co-indexed w/the head noun "ronbun-o."

Externally-headed clauses without gaps

- (2) [DPmusuko-ga iede-sita] Taroo
Son-NOM ran away from home Taro
'Taro whose son ran away from home' (Tsujimura, 1996, Ch. 5: EX 270)

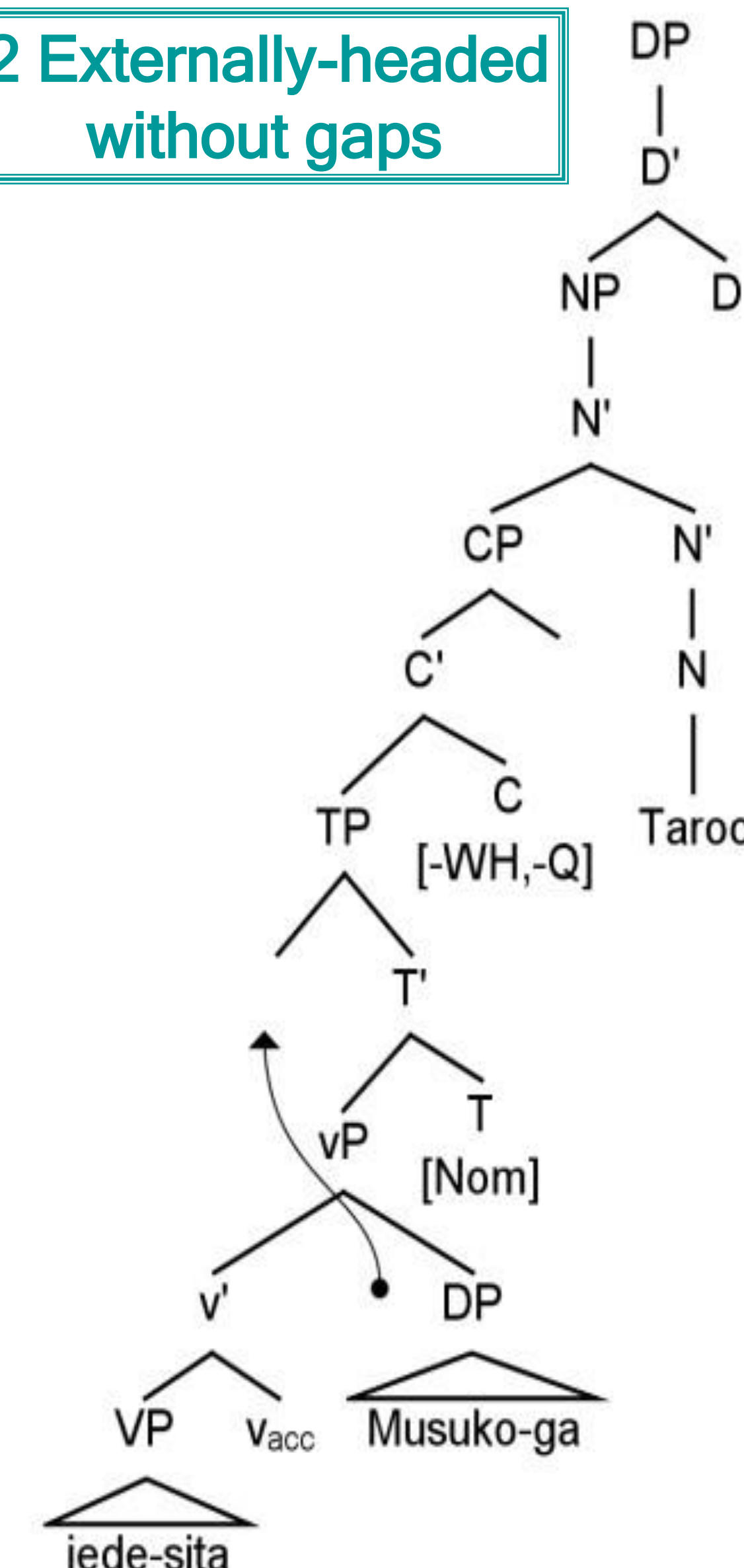
- In (2), no OP_i is in our deep structure.

INTERNALLY-HEADED CLAUSES AND THE PUPPET HEAD NOUN *no*

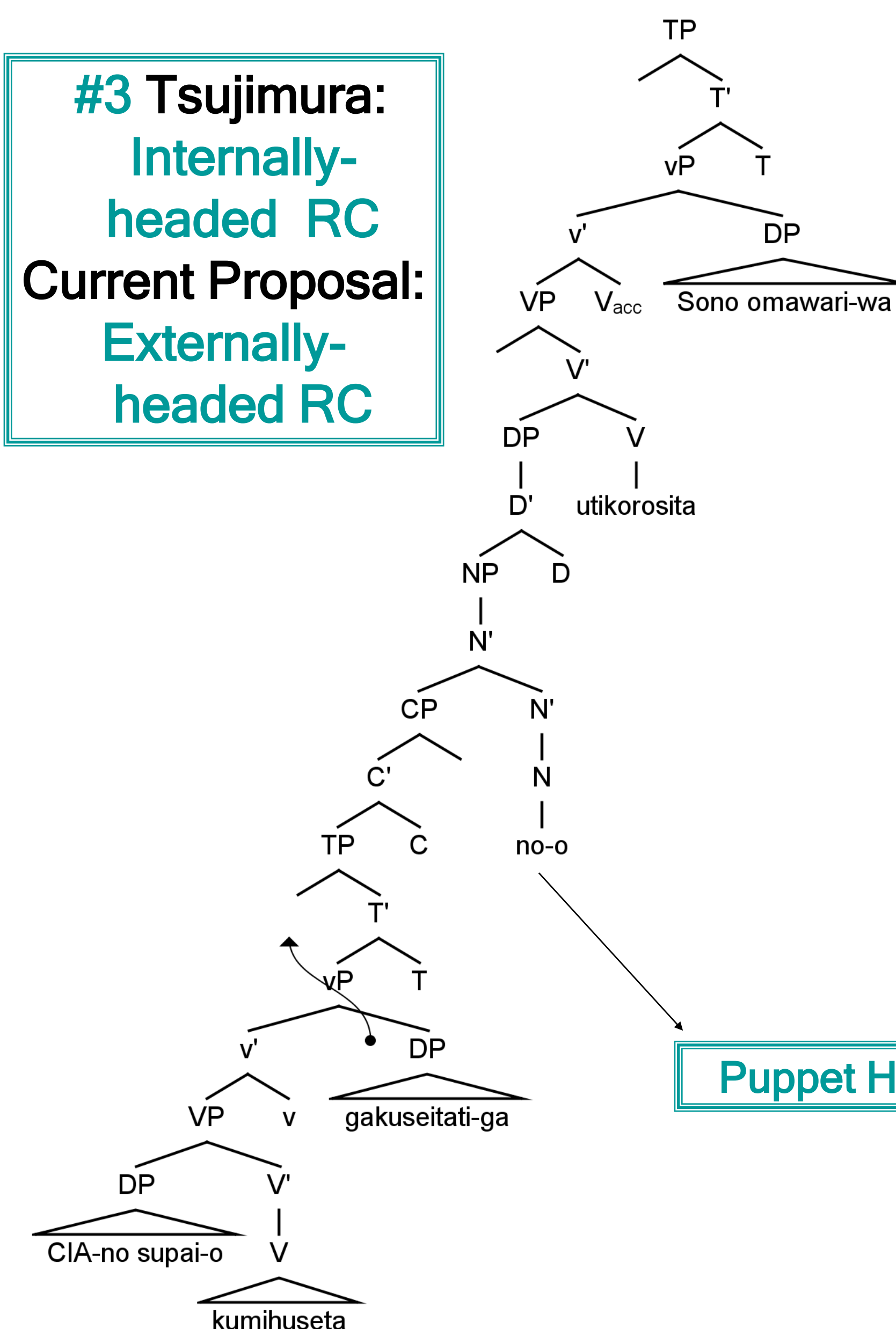
- (3) Sono omawari-wa [DPgakuseitai-ga CIA-no supai-o kumihuseta]-no-o utikorosita.
That cop-TOP students-Nom CIA-Gen spy-Acc hold down-one-Acc shoot/killed
'The cop shot and killed the students who held down the CIA spy.' OR
'The cop shot and killed the CIA spy who the students held down.' (Ch. 5: EX 275)

- The head noun is *inside* of the clause.
- In (3), Tsujimura observes that the particle *no* translates into "one" and argues that *no* "replaces" the head that is internal to the relative clause.
- The particle *no* follows strictly after the verb but it is external to the relative clause.
- *No* occupies the position of the head noun in an externally-headed clause.
- ***No* is a puppet head noun.**

#2 Externally-headed without gaps



#3 Tsujimura: Internally-headed RC Current Proposal: Externally-headed RC



PROPOSAL
Building on Tsujimura's observation about *no*, I propose that internally-headed RCs are actually externally-headed RCs without gaps.

SUMMARY

- When the particle *no* is placed after the verb in what looks like an internally-headed clause; it functions as a "puppet" head noun.
- In what have been identified as internally-headed RCs, the placement of *no* suggests that it is structurally similar to the externally-headed clauses without gaps.
- Japanese only has externally-headed RCs.

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ADDITIONAL EVIDENCE

- Cole (1987) also argues that what look like IHRs in Imbabura and Ancash, two Quechua languages, are actually externally-headed with a phonologically null head.
- (5) [DPnuna bestya-ta_i ranti-shqa-n] ∅_i
man horse-ACC buy-PER-3
alli bestya-m ka-rqo-n
good horse-EVID be-PAST-3
'The horse the man bought was a good horse' (EX. 1)

PARALLEL BETWEEN RC & WH-Qs

- For the operator in externally-headed clause with gaps, the OP_i does not move to the Spec, CP position and remains in its initial position.
 - WH-in situ in Japanese
 - The WH-word replaces the DPs at the same position it originated in.
 - The question marker *ka* is added at the end of the sentence to form a question.
- (4) Hanako-ga kinoo tomodati-to nani-o tukurimasita ka.
Hanako-Nom yesterday friend-w/ what-Acc made Q
'What did Hanako make with her friends yesterday?' (Ex 50)

Effects of Focus on Word Order in Kabyle Berber

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1 Introduction

I present experimental results on the relationship between focus and word order in Kabyle Berber. Previous work established that arguments precede the verb in Kabyle for discourse reasons (Mettouchi & Fleisch 2010), but the effects of focus on word order have not been systematically tested. In the experiment presented here, participants answered questions about illustrations; each question was designed to elicit an answer with a certain argument focused.

The results of the experiment confirm some previous generalizations about Kabyle: clefts are used for subject focus, and SVO order is used for ‘predicate focus’ (Mettouchi & Fleisch 2010). In object focus SVO order is most frequent, despite previous descriptions of clefts for all types of argument focus. Most interestingly, in broad focus the word order used most often was SVO, although Berber is said to have basic VSO word order. The prevalence of SVO in broad focus has a variety of possible explanations, but this may indicate that Kabyle is changing toward using SVO word order in more contexts.

2 Background

Kabyle (Taqbaylit) is a language of the Berber family, spoken in Algeria. There are about five million speakers of Kabyle worldwide (Mettouchi 2008). The experiment detailed below was carried out in Montréal.

The basic word order of Berber languages, Kabyle included, is VSO (Naït-Zerrad 2001). This is shown in (1).¹

*My sincere thanks to Karima Ouazar and all the experiment participants. Many thanks to my advisors Jessica Coon and Michael Wagner, and thanks to Lydia Felice and Lauren Clemens for their helpful comments.

¹Abbreviations: 3M=3rd person masculine, AA=anti-agreement verb form (also known as ‘participle form’), C=complementizer, COP=copula.

- (1) y-erza Yidir lemri
 3M-broke Yidir mirror
 ‘Yidir broke the mirror.’

Other word orders are also possible to convey information structure. Arguments may be preverbal as in (2), or preverbal and clefted as in (3).

- (2) Yidir y-erza lemri
 Yidir 3M-broke mirror
 ‘Yidir broke the mirror.’

- (3) D Yidir i y-erza-n lemri
 COP Yidir C AA-broke-AA mirror
 ‘It was Yidir that broke the mirror.’

Mettouchi (2008) and Mettouchi & Fleisch (2010) studied the frequency of different word orders in conversational and narrative corpora. Mettouchi (2003) investigated argument focus and clefts in Kabyle, but it is not clear whether she elicited any other word orders associated with focus. Shlonsky (1987) also compared SVO and cleft constructions in Berber, focusing on their syntax and not what type of focus the constructions denote.

Mettouchi & Fleisch (2010) described the following relations between focus and word order in Kabyle: when one argument is focused, it is clefted. When the entire sentence is in focus, VSO is used. When the predicate (i.e. the entire VP) is focused, SVO word order is used. Predicate focus is associated with topic–comment constructions. However, they presented these findings as facts without giving much evidence.

Mettouchi & Fleisch (2010) did carry out a similar investigation for Tachelhit Berber to the one presented here. They studied responses to questions in Tachelhit to determine how focus and word order interact. They found VSO in broad focus, SVO in predicate focus, and clefts for argument (subject or object) focus. However, they state that Tachelhit and Kabyle are different in terms of focus and word order. All that they specify about how Kabyle is different is that it allows more SVO.

3 Experiment

To more clearly determine the relationship between focus and word order in Kabyle, I performed an experiment to test which word orders Kabyle speakers would produce in contexts with focus on various constituents. This was done by asking questions: the answer to a question is in focus (Büring 2009), so varying what is questioned about the same picture varies what constituent is in focus in the response. The design is based on that of Calhoun (2015) for Samoan, also used by Clemens *et al.* (2017) for Ch’ol and Hamilton (2015) for Mi’gmaq.

In the experiment, participants were shown pictures on a computer screen, and heard a question about the picture in Kabyle. An example picture is shown in Figure 1. The participants answered into a microphone headset. The only instruction about their answer was that they should use two overt arguments; this is required to study word order.² This instruction was included because the most natural way to answer a question is with a fragment. In addition, Kabyle is pro-drop, so even when using a full sentence the most natural way to answer is to drop the already given arguments.

Figure 1: Illustration of event ‘Yidir broke the mirror.’



²The instructions to the participants were: please answer in complete sentences, using the names of the characters and objects in the drawing.

There were 18 items (i.e. pictures), which depict events with both a subject and object. The items were balanced in object animacy and grammatical gender of the arguments.

The questions asked contained six conditions (i.e. types of focus). These are summarized in Table 1. Wh-movement to the cleft position is obligatory in Kabyle; for the two non-wh questions (the corrective focus conditions), VSO word order was used.

Table 1: Types of Focus (example questions for event ‘Yidir broke the mirror’)

Focus Type	Focused Constituent	Corresponding Question
Broad focus:	sentence	‘What happened?’
Predicate focus:	VP	‘What did Yidir do?’
Subject focus:	subject	‘Who broke the mirror?’
Corrective subject focus:	subject	‘Did Amezyan break the mirror?’
Object focus:	object	‘What did Yidir break?’
Corrective object focus:	object	‘Did Yidir break the window?’

Corrective versus noncorrective argument focus was included to make the results comparable with Calhoun (2015) and Clemens *et al.* (2017). Predicate focus was included due to its discussion in Mettouchi (2008), and because it was the only type of focus expected to elicit SVO order without clefting.

All participants saw all conditions for each item, for a total of 108 stimuli. The stimuli were shown in pseudorandom order. To enable me to check that there were not any effects from previous stimuli as the experiment went on, every $\frac{1}{6}$ block of the stimuli was also a Latin Square design, and each block can be analyzed as a smaller experiment. The recordings were automatically aligned with the transcriptions using the Montreal Forced Aligner (McAuliffe *et al.* 2016), in order to allow for analysis of prosodic measures.

The experiment was run on nine native Kabyle speakers living in Montréal who all grew up in Kabylie, Algeria and moved to Canada as adults³. Five are male, four female. The age range is 23–59, with an average age of 34. All speak French and Arabic, which they learned in school as young children (starting at the age of 5–7, 10 at the latest). One is bilingual in Kabyle and French. All also speak English, which they began learning generally in their early teens.

³Except one who participant moved to Canada in his early teens.

4 Results

As a reminder, the expected word orders were: clefts in argument focus, SVO in predicate focus, and VSO in broad focus. The results can be seen in Table 2.

Table 2: Word Order Results (most frequent word orders in bold)

Focus Type	Expected Word Order	SVO	Cleft	VSO	VO	Fragment	Other
Broad focus:	VSO	94%	5%	1%	–	–	–
Predicate focus:	SVO	97%	–	–	3%	–	–
Subject focus:	<i>S_{cleft}</i> VO	–	94%	–	–	5%	1%
Corrective subject focus:	<i>S_{cleft}</i> VO	2%	92%	2%	–	3%	1%
Object focus:	<i>O_{cleft}</i> VS	81%	11%	2%	5%	1%	–
Corrective object focus:	<i>O_{cleft}</i> VS	55%	13%	10%	14%	3%	5%

While the data for predicate focus (i.e. topic–comment constructions) and for subject focus confirmed the expected word orders in those conditions, the other conditions yielded unexpected results.

The most surprising result of the experiment is the low frequency of VSO across the board. Especially, one would expect the basic word order to appear in broad focus. It is not unprecedented to find more SVO than expected in broad focus in a similar experiment: Clemens *et al.* (2017) found SVO order was most frequent in broad focus in Ch’ol, also a V1 language with fronting for topic and focus. However, my results show a much lower frequency of V1 order in broad focus: 1% VSO in Kabyle vs. 42% VOS for Ch’ol.

This suggests that Kabyle may be in the process of changing toward more SVO order, and that SVO may eventually become the basic word order of Kabyle. If this is the case, Kabyle is still in an intermediate stage of change, because VSO is still accepted and sometimes used. Moreover, VSO is still attested in elicitation and in narratives and conversations (Mettouchi 2008), and VSO is the basic word order across Berber.

If Kabyle is changing toward SVO as its basic word order (or at least, changing toward SVO in a larger range of contexts), it is possible that this may be due to contact with French. Alternatively, it could be a change internal to Kabyle due to SVO order when the subject is the topic. However, it is likely influenced by French to some extent. It would

be interesting to run this experiment on non-French-speaking (preferably monolingual) Kabyle speakers in the future.

It is also possible that the answer to a question has some properties which create SVO order. Or, the subject may be being interpreted as a topic because the same characters reappeared over the course of the experiment. To rule this out, I analyzed the first and last $\frac{1}{6}$ of the responses, which each follow a Latin Square design. While the amount of data in each $\frac{1}{6}$ is small, there is no significant difference between the amount of SVO, clefts, and VSO in the first and last blocks in any condition.⁴

The other interesting result is that objects were rarely clefted. Instead, SVO order was used in object focus. This is a similar pattern to that noted in Hamlaoui (2008) for French. This may be a crosslinguistic tendency, or could also be an effect of contact between Kabyle and French. Instead of clefting, focus on the object is conveyed through prosody: focused objects have significantly higher pitch and intensity relative to the subject than objects in broad focus do.⁵

Also, objects show a difference between corrective and noncorrective focus. There is a significant difference in word order distribution according to the chi-squared test with $p < .01$. There is also a significant difference in pitch between corrective and non-corrective object focus. There is no significant difference for subject corrective focus.

Lastly, it is now clear that there is a subject cleft if and only if the subject is focused. In addition, the subject is also significantly more prosodically prominent, in terms of pitch and intensity, in subject focus cleft sentences than in broad focus SVO sentences.

5 Conclusion

This experiment has demonstrated the following. VSO word order is much rarer than previously thought in Kabyle broad focus sentences, which may indicate a change toward basic SVO order. SVO order is also used in predicate focus. Clefts are used for subject fo-

⁴Except for more clefts for non-corrective object focus in the last $\frac{1}{6}$ of the experiment with $p=.01$. This was tested using the chi-squared test.


⁵I used mixed model regression with condition (focus type) as a fixed effect, and item and participant as random effects. I trained a model for each of pitch, intensity, and duration in SVO and S_{cleft} VO sentences; significance was taken to be $|t| > 2$.

cus, and are rarely used for object focus. Instead, SVO word order with prosodic marking is used to convey object focus. Prosodic marking is also used in subject focus clefts.

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Effects of focus on word order in Kabyle Berber

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Introduction

Kabyle

A Berber language spoken in Algeria

Speakers: 5-7 million


Berber flag

Basic word order is VSO

VSO: *Yerza Yidir lemri*
broke Yidir mirror
'Yidir broke the mirror'

Word orders with pre-verbal arguments appear to be for topic and focus

Pre-verbal arguments may be clefted or not clefted

S_{cleft}O: *D Yidir i yerzan lemri*
COP Yidir C broke.AA mirror
'It was Yidir that broke the mirror'

O_{cleft}VS: *D lemri i yerza Yidir*
COP mirror C broke Yidir
'It was the mirror that Yidir broke'

SVO: *Yidir yerza lemri*
Yidir broke mirror
'Yidir broke the mirror'

Kabyle is pro-drop

Focus

Focus is a part of information structure that marks new and/or contrastive information in a sentence (Calhoun 2015, Büring 2009 for discussion)

Questions systematically trigger focus on the new information in the answer to the question

Predicate focus is focus on the entire VP, which is associated with topic-comment constructions where the subject is the topic (Mettouchi & Fleisch 2010)

Research Question:
Precisely how do focus and word order interact in Kabyle?

Acknowledgements

I would like to thank Karima Ouazar for sharing her language with me over the last 2 years, and all of the participants as well.

I also would like to thank Jessica Coon and Michael Wagner for their mentorship, and Lydia Felice and the McGill Fieldwork/Ergativity Lab and Ling Tea for their comments and help.

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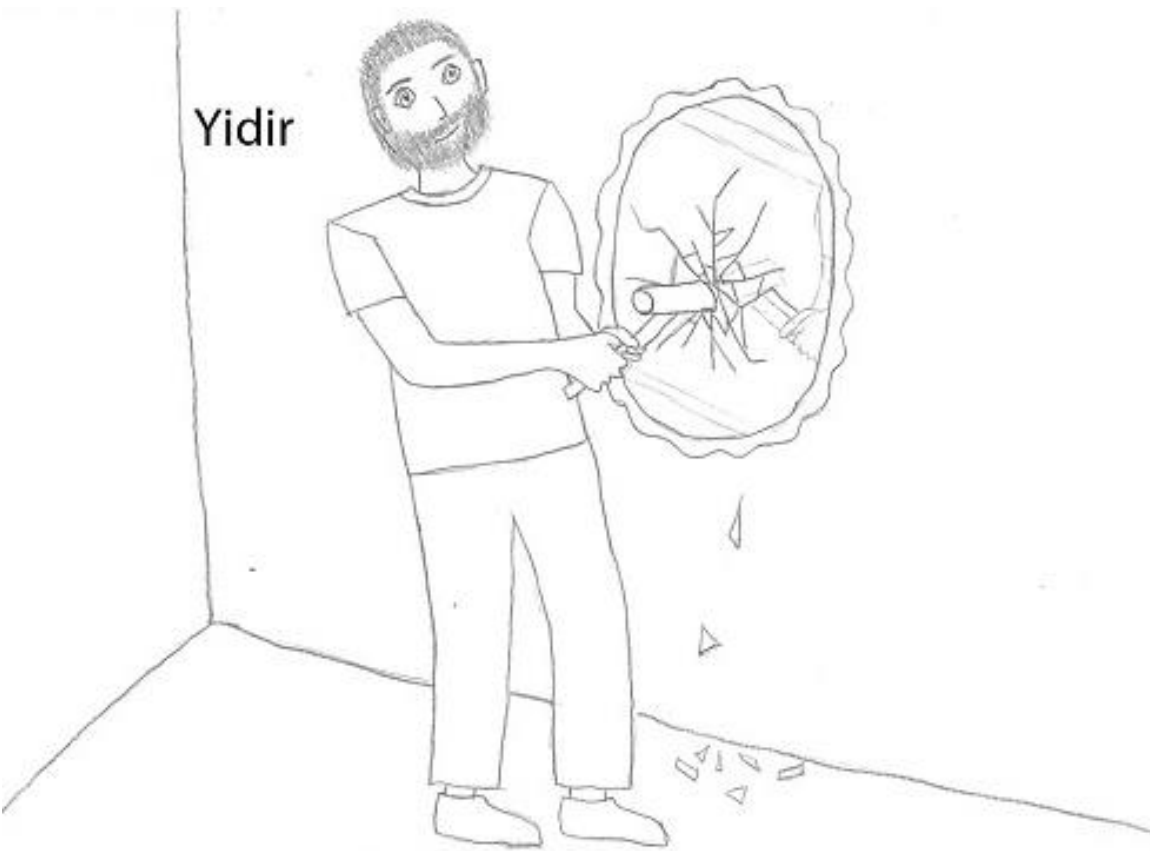
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Experiment

Method

Kabyle speakers are shown illustrations of events, and are asked to answer questions about each event in complete sentences


Illustration of event 'Yidir broke the mirror'

18 items (events), 6 conditions (questions).

Pseudo-random design: each participant saw all questions for each event

The 6 types of focus and their corresponding questions:
(for event 'Yidir broke the mirror')

Focus Type	Example Question	Expected Answer
1. Broad focus:	<i>ḡacu i yeḡran?</i> 'What happened?'	VSO ₁
2. Predicate focus:	<i>ḡacu i ixeddem Yidir?</i> 'What did Yidir do?'	SVO ₁
3. Subject focus:	<i>aniwa i yerzan lemri?</i> 'Who broke the mirror?'	S _{cleft} VO ₂
4. Corrective subject focus:	<i>terza Amina lemri?</i> 'Did Amina break the mirror?'	S _{cleft} VO ₁
5. Object focus:	<i>dacu i yerza Yidir?</i> 'What did Yidir break?'	O _{cleft} VS ₂
6. Corrective object focus:	<i>yerza Yidir ṭaq?</i> 'Did Yidir break the window?'	O _{cleft} VS ₁

(1: Mettouchi 2008, 2: Ouhalla 1993)

Demographics

8 participants: 4 female, 4 male

Age range: 25-59

All grew up in Algeria, also speak French, Arabic, and English

Preliminary Results

Word Order by Focus Type:

Focus Type	Expected	SVO	VSO	Cleft	VO	Fragment	Other
1. Broad:	VSO	93%	1%	5% (S _{cleft} VO)	--	--	--
2. Predicate:	SVO	99%	--	--	1%	--	--
3. Subject:	S _{cleft} VO	--	--	94%	--	5%	1%
4. Corrective Subject:	S _{cleft} VO	2%	1%	93%	--	3%	1%
5. Object:	O _{cleft} VS	83%	2%	11%	3%	1%	--
6. Corrective Object:	O _{cleft} VS	60%	9%	13%	14%	3%	1%

Most frequent word order in dark blue for each focus type; orders with 10% or higher in light blue

Expected word order percentage in bold

Broad, object, and corrective object focus results differ from predicted word order

Discussion

VSO order is rare, even in broad focus

Some SVO in broad focus is not unexpected for a verb-initial language: similar to results in Mayan (Clemens et al. 2017)

VSO order also acceptable in elicitation

Kabyle may be changing to SVO, possibly due to French contact

Focused subjects are clefted; focused objects usually not clefted

Similar tendency in French (Hamlaoui 2008, Lambrecht 2001)

This may also be an effect of bilingualism with French

Contradicts previous analysis of Kabyle (Mettouchi 2008)

Future Directions

Prosody:

Prosody has been shown to mark focus in many languages when word order is also used (Calhoun 2015, Büring 2009)

Prosody results:

In SVO sentences with focused objects, O has higher pitch and intensity than in broad focus SVO

In subject clefts, S has higher pitch and intensity than in broad focus SVO

Topic and its relation to word order should be investigated more in the future

More investigation of SVO vs. VSO and of corrective objects

Similar experiment on monolinguals

Noun and numeral classifiers in Chuj (Mayan)

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1 Introduction

The Q'anjob'alan Mayan languages are famous for their multiple systems of noun classification (see e.g. Craig 1986 on Popti', Zavala 2000 on Akateko, and Mateo Toledo 2016 on Q'anjob'al). Chuj, a Q'anjob'alan language spoken in the highlands of Huehuetenango, Guatemala by approximately 45,000 people is no exception. Consider the following example:¹

- (1) Ay ox-**wanh** **heb'** **winh** winak ix-in-ek'-i.
EXTL three-**NUM.CLF** **PL** **N.CLF** man PFV-A1-pass-IV
'There are three men where I passed.'
(Buenrostro 2013)

In 1, three morphemes classify the noun *winak* 'man'. The morpheme *-wanh* is a numeral classifier, not dissimilar to those described in Tzeltal (Berlin 1968) or in Cantonese Chinese (see Cheng and Sybesma 1999). These numeral classifiers, which classify nouns in terms of animacy, must follow some quantifying expressions. Following the numeral classifier, is *heb'*, a plural marker only for humans.² Non-human nouns have no corresponding plural marker. Finally, the grammatical item appearing directly before the noun, *-winh*, is a noun classifier. This type of classifier will consist in the main focus of this short paper.

2 Noun classifiers

Chuj has approximately 15 noun classifiers, shown below. These classifiers have been described as third person pronouns when used in anaphoric contexts (e.g. Domingo Pascual 2007).

INSERT TABLE 1

* The following abbreviations are used in the paper: A: ergative marking, AP: antipassive, EXTL: existential, INDF: indefinite, IV: intransitive, N: noun, N.CLF: noun classifier, NEG.EXTL: negative existential, NUM.CLF: numeral classifier, PFV: perfective, PL: plural, PREP: preposition.

² Note that some linguists, for example Zavala 2000 for Akateko, have treated the cognate of this morpheme in related Q'anjob'alan languages as a classifier. However, this paper treats *heb'* as a regular plural marker, reminiscent of the human only *-men* plural marker in Mandarin Chinese (Li 1999). Moreover, plural markers are not considered as classifiers in Aikhenvald's (2000) typology of noun classifiers.

Not all nouns have a corresponding noun classifier. For instance, abstract nouns such as the words for ‘idea’ and ‘desire’ cannot be classified. In addition, noun classifiers contribute varying semantic information. Although they often appear to be redundant, they sometimes serve as the only semantic cue in distinguishing between nouns, as is the case for *winh unin* ‘the boy’ (lit. the male child) and *ix unin* ‘the girl’ (lit. the female child).³ Nouns made out of more recently-introduced materials like plastic, lack a corresponding noun classifier, as can be observed in the following three examples:

- | | | |
|---|---|--|
| (2) a. te' mexa
N.CLF table
‘the table (wood)’ | b. k'en mexa
N.CLF table
‘the table (metal)’ | c. mexa
table
‘The table (plastic)’ |
|---|---|--|

Past analyses of Chuj classifiers and other related Q'anjob'alan languages have described noun classifiers as definite determiners (e.g. Domingo Pascual 2007). However, noun classifiers sometimes appear in contexts that cross-linguistically disallow definiteness:

- (3) Ix-b'at heb' t'a mercado jun **winh** winak y-et' jun **ix** ix.
 PFV-go PL PREP market INDF N.CLF man A3-with INDF N.CLF woman
 ‘A man and a woman went to the market.’
- (4) Ay [**ch'anh** libro] yib'an te' mexa.
 EXTL [N.CLF book] over N.CLF table
 ‘There are books on the table.’

Examples 3 and 4 demonstrate that noun classifiers are acceptable in contexts where definite determiners should be illicit, namely in existential contexts and in contexts where a noun phrase is being introduced for the first time (Milsark, 1974; Diesing, 1992).

This raises the question of what exactly the semantic contribution of classifiers is. Following work by Craig (1986) on Popti', I argue that noun classifiers appear only in contexts where the denotation of the noun is not empty. Some diagnostics can be used to show this. One

³ Note that these classifiers are not adjectives, as adjectives can redundantly appear after the noun, for instance, as in [[N.CLF *lum* NOUN *mexa*] ADJ *lu'um*] ‘the metal table’ (Craig, 1986).

diagnostic is that noun classifiers are not allowed on the patient nominal in a construction known as the “incorporation antipassive”, as noted in Maxwell 1976 and Coon 2017.

- (5) Ix-onh-xik-wi (*te') k'atzitz.
 PFV-A2PL-chop-AP N.CLF wood
 ‘We chopped wood (lit. we wood-chopped).’ (Coon 2017)

This is expected, given that incorporation antipassives cannot have other functional structure, must be verb-adjacent, and that the construction must be syntactically intransitive (Coon 2017). Noun classifiers are also illicit in contexts where the set the noun denotes is empty:

- (6) a. CONTEXT: *The speaker asks his interlocutor out of the blue whether she has a sister.*
 Ay (*ix) hanab?
 EXTL N.CLF sister
 ‘Do you have a sister?’
- b. CONTEXT: *The speaker meets the interlocutor, who happens to be with someone who looks exactly like her. So, the speaker asks her whether that person is her sister.*
 Ay ix hanab?
 EXTL N.CLF sister
 ‘Is that your sister?’
- (7) a. Malaj (*nok') hin-tz'i'.
 NEG.EXL N.CLF A1-dog
 ‘I don’t have a dog.’
- b. Malaj nok' hin-tz'i'.
 NEG.EXL N.CLF A1-dog
 ‘I don’t have my dog (with me).’

Under the interpretation in 6b and 7b, the speaker is committed to the existence of a sister or a dog respectively. In other words, the denotation of the noun must not be empty. In contrast, the lack of a noun classifier in 6a and 7a does not presuppose anything about the existence of a sister or a dog. The following similar contrast also falls out from this:

- (9) a. CONTEXT: *The speaker knows that there are priests in the village, and wonders whether his interlocutor saw them.*
 Ix-y-il winh paleh waj Xun t'a chonhab'?
 PFV-A3-see N.CLF priests N.CLF John PREP village
 ‘Did John see the priests in the village?’

- b. CONTEXT: *The speaker doesn't know whether there are priests in the village.*

Ix-y-il ☐ paleh waj Xun t'a chonhab'?

PFV-A3-see ☐ priest N.CLF John PREP village

'Did John see priests in the village?'

Finally, another useful diagnostic is that noun classifiers are obligatory in contexts where the noun phrase has already been introduced in discourse, as shown in 8.

- (8) Ay nok' hin-mis yet' nok' hin-tz'i'. Ix-way ***(nok')** mis.

EXTL N.CLF A1-cat with N.CLF A1-dog. PFV-sleep N.CLF cat

'I have a dog and a cat. The cat slept.'

3 Noun classifiers as anaphoric pronouns?

In Chuj, as well as other languages, noun classifiers are also described as 3rd person pronouns (see e.g. Domingo Pascual 2007, Marnita 1996 for Minangkabau and Hui 2003 for Vietnamese):

- (10) Ay jun ix w-isil. Tenikan **ix**.

EXTL INDF N.CLF A1-daughter intelligent N.CLF

'I have a daughter. She is intelligent.'

In the second sentence of example 10, the status of *ix* is uncertain. One could posit that *ix* is a referential pronoun. Alternatively, one could analyze it as a noun classifier appearing before a null pronoun.⁴ I propose that the latter option offers a more unified account of noun classifiers in Chuj. This account is illustrated in 11.

- (11) [N.CLF *ix* [N *wisi*]] [N.CLF *ix* [☐]]

That noun classifiers imply that the denotation of the noun cannot be empty also conveniently explains why noun classifiers are illicit before bound variables (see Craig 1986: 267 for a similar pattern in Popti'), as demonstrated by the following contrast:

- (12) a. Ix-y-il naj Xun_i ix s-nun **(*winh)** *pro*_i.

PFV-A3-see N.CLF John N.CLF A3-mother N.CLF PRO

'John_i saw his_i mother.'

⁴ Note that many Mayan languages lack 3rd person pronouns.

- b. Ix-y-il naj Xun_i ix s-nun ***(winh)** *proj.*
 PFV-A3-see N.CLF John N.CLF A3-mother N.CLF PRO
 ‘John_i saw his_j mother.’

Example 12a shows that when the null pronoun is a bound variable, and therefore not referential (Bach and Partee 1980), the classifier is not allowed. In contrast, pronouns that are referential and which therefore are denoted by a specific individual, as in 12b, require a classifier.

4 Numeral classifiers

Whereas noun classifiers imply that the denotation of a noun cannot be empty, numeral classifiers arise due to the properties of quantifying expressions. There have been two major ways of analyzing the presence of classifiers following quantifying expressions. One view, defended in Chierchia 1998, is that nouns in languages featuring numeral classifiers are semantically equivalent to mass nouns in non-classifier languages like English. The presence of a classifier is dictated by properties of the noun. A second view, presented by Krifka (1995), has been to interpret the appearance of numeral classifiers as resulting from properties of the numeral or of the quantifying expression.⁵

Following Bale and Coon 2014 for Ch’ol and Mi’gmaq, I propose that only a theory in which numeral classifiers appear as a consequence of the properties of quantifying expressions accounts for the data in Chuj. Chuj is especially relevant because only a subset of its numerals and quantifying expressions require the presence of a numeral classifier. Therefore, Chierchia’s theory fails to capture the Chuj data, because numeral classifiers can be required or not independently of whether the noun remains the same, as demonstrated in examples 13a-13d:

- 13 a. Ay chab’-**wanh** **nok’** tz’i’.
 EXTL two-NUM.CLF N.CLF dog
 ‘There are two dogs.’
- b. Ay jun/veintiuno-***(wanh)** **nok’** tz’i’.
 EXTL one/twenty-one-NUM.CLF N.CLF dog
 ‘There is/are one/twenty one dogs.’

⁵ Krifka (1995) actually presents both views, and states that there might not be a way to decide between the two.

- c. Ix-s-lo' junjun china junjun-(***wanh**) **nok'** tz'i'.
 PFV-A3-eat each orange each-NUM.CLF N.CLF dog.
 'Each kid ate an orange.'
- d. Jay-e' mexa?
 how.many-NUM.CLF table
 'How many tables are there?'

These examples show that the presence or absence of a numeral classifier is not related to the noun being used, but rather to the quantifying expression. In Chuj, some quantifying expressions fail to encode a measure function, resulting in the obligatory appearance of the numeral classifier, an overt realization of that measure function. Therefore, whether or not a nominal expression is referential determines whether a noun classifier is used; but it's the *quantifying expression* that dictates whether a numeral classifier is used.

6 Conclusion

This short paper provides a description and analysis of the contexts in which noun and numeral classifiers appear in Chuj. Noun classifiers imply that the denotation of a noun is not empty, whereas numeral classifiers arise due to the properties of certain quantifying expressions. These observations lead to the conclusion that noun and numeral classifiers are separate grammatical items, even if in some languages, the same classifier can surface in both noun and numeral classifier contexts (see Aikhenvald 2000 on Vietnamese and Hmong). Hence, the Chuj facts support Aikhenvald's typology of classifiers in treating them as separate grammatical items. Moreover, as shown in (14), there exist contexts in which noun classifiers and numeral classifiers cannot be licensed at the same time, their distribution thus being independent from one another:

- (14) a. Ay jun-(***wanh**) **nok'** tz'i' t'achi.
 EXTL one-NUM.CLF N.CLF dog here
 'There is one dog here.'
- b. Ay chab'-**wanh** (***ix**) hanab?
 EXTL two-NUM.CLF N.CLF sister
 'Do you have two sisters?'

Finally, future research should look at formalizing the distribution of noun classifiers. One possibility is that noun classifiers trigger an existence presupposition. Indeed, as shown in 9a and 9b, speakers seem to use noun classifiers before NPs (including covert pronouns) when it is presupposed that the extensional interpretation of the noun is not empty.

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TABLE 1

Noun classifiers	Used to classify	Source noun	Example
ix	females	ix “woman”	ix unin “the woman”
winh	males	winak “man”	winh unin “the boy”
nok’	animals	nok’ “animal”	nok’ tz’i’ “the dog”
te’	wooden things	te’ “tree”	te’ mexa “the able” (if made of wood)
anh	plants / herbs	anh “plant”	anh paj’ich “the tomato”
atz’am	salt products	atz’am “salt”	atz’am atz’am “the salt”
ixim	corn products	ixim “corn”	ixim wa’ih “the tortilla”
k’en	metal products	k’e’en “metal”	k’en mexa “the table” (if made of metal)
lum	earth / soil related things	lu’um “earth”	lum yax lu’um “the mountain
ha’	liquids	ha’ “water”	ha’ ha’ “the water”
ch’anh	vine products	ch’anh “vine”	ch’anh libro “the book”
k’ak / k’apak	clothing	k’apak “clothes”	k’ak k’apak “the clothes”
unx	young female names	ix “woman”	unx María “María”
naj	young female names	winak “man”	naj Pablo “Pablo”
waj / winaj	male names	winak “man”	waj Pablo “Pablo”

Possession in Minangkabau

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1 Introduction

Current theories about the structure of possession in Indonesian-type languages—in this study, those with the DP s-structure of Num>CL>N>Poss>D—vary widely. Although there have been a few descriptive studies of Minangkabau DPs (e.g. Marnita 2016), there have been no analyses proposed for possession in this language. This study applies four theories from Indonesian-type languages (Simpson 2005, Loewen 2011, Jeoung 2016, and Davies & Dresser 2005)¹ to data from Minangkabau—an Indonesian-type, Austronesian language from western Sumatra with approximately 5.5 million speakers. The goal of this study is to create an account of possession that captures generalizations about word order in Minangkabau (Min) phrases involving possession—specifically that demonstratives and possessors can cooccur, as in 1.²

- (1) tigo ikua anjiang lia kami tu (Min. Marnita 37)
 three CL.tail dog wild 1.PL.EXCL DEM
 ‘those three wild dogs of ours’

I show that possessors (Poss) should generate in [Spec,DP], variation of Jeoung’s analysis that incorporates aspects of Simpson’s, while moving away from use of a Possessor Phrase, resulting in a structure such as 2. This theory relies on movement of the NumP to adjoin to the DP. I show that this analysis works for much of the Indonesian (Ind) data as well.

- (2) [DP POSSXP Dem [NumP Num CL NP]] → [DP[NumP Num CL NP]_i [DP[POSSXP Dem] t_i]]

* Many thanks to my native speaker, Alief Moulana; the Carleton College Linguistics Department; Professor Catherine Fortin; the participants of Field Methods (LING 280) in Spring 2016 at Carleton College; the participants of the Berkeley Linguistic Society’s 43rd Annual Conference and the Carleton College Parents’ Fund. Uncited data are my own. All errors are mine.

¹ A paper by Ekarina Winarto (2016) on the Indonesian DP has come to my attention recently, after the conclusion of this research. All conclusions in this paper were reached independent of Winarto.

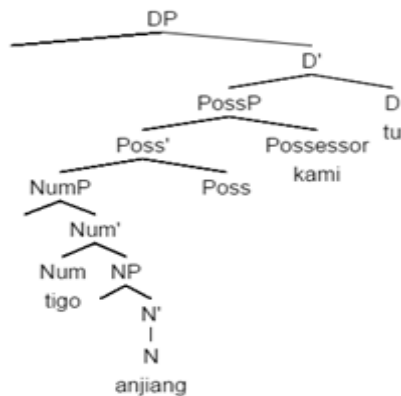
² Glosses used in this paper: CL=Classifier, DEM=Demonstrative, EXCL=Exclusive, NOM=Nominalizing, PL=Plural, POSS=Possessor

2 Current literature

In reviewing current theories on the internal structure of Indonesian-type DPs, and in applying those theories to Minangkabau, I focus on five phenomena that these structures ought to account for: surface word order, cooccurrence of possessors and demonstratives, phrasal possessums,³ the scope of demonstratives over possessors, and left-headed phrases.

Loewen (2011) hopes to account for Indonesian word order without movement,⁴ and to do so she suggests a structure such as 3.⁵ In the following trees, I include words from the phrase in 1 for ease of understanding.

(3) (Adapted: Loewen 226)



Loewen's analysis generates correct word order, cooccurrence of both possessors and demonstratives, existence of large possessums, and correct scope of demonstratives and possessors. But using both left and right branching nodes produces inconsistency in the language.

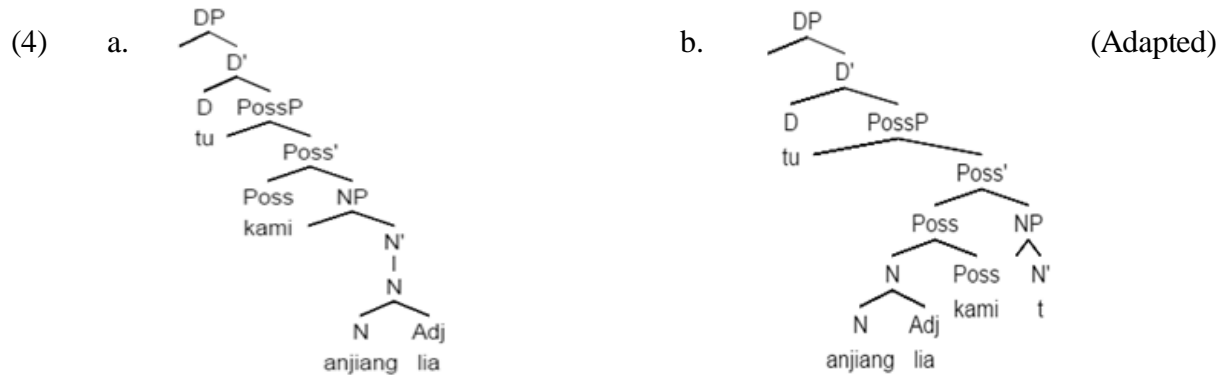
In contrast, Davies and Dresser's (2005) account for the DP structures of Madurese and Javanese attempts to maintain language internal consistency while still using a PossP. To account for word order, they rely on head movement of a noun-adjective complex in which it adjoins to the possessor noun, because in 4a the demonstrative and possessor come linearly before the possessum. This results in 4b. However, this result is highly flawed. Primarily, it does not produce the proper word order, generating an s-structure in which D precedes the possessor as

³ In this paper, a phrasal possessum is any possessum that consists of more than simply a noun—one that includes a numeral, a classifier, an adjective, etc.

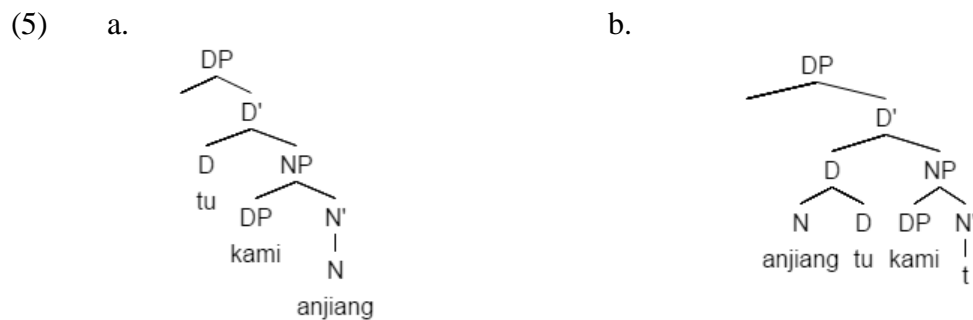
⁴ Loewen does not motivate why this avoiding movement ought to be important, but it is a valuable exercise to consider this theory.

⁵ Note that in this account, Poss is a feature-assigning node rather than the actual possessor. The possessor is generated in the [Spec, PossP].

well as the possessum. Furthermore, this analysis will not be able to account for phrasal possessums because it relies on head-movement to produce proper word order. Any numeral or classifier will not move linearly ahead of the possessor in Davies & Dresser's account.



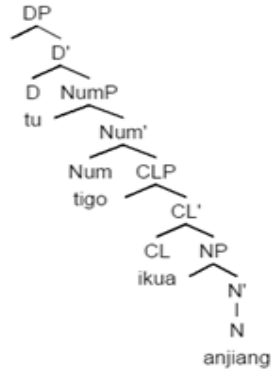
Jeoung (2016) presents one way in which to counter the issue of word order adjoining the noun directly to the demonstrative. In order to do this, she suggests that the possessor is instead a full DP generated in [Spec,NP]. However, Jeong's analysis still fails to achieve proper word order, having the D linearly precede the possessor. Furthermore, her analysis will not account for large possessums because it relies on head-movement. One benefit of her analysis, though, is that it allows for full DPs to act as possessors, a necessary allowance to account for data such as 6.



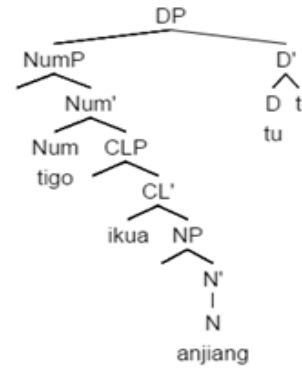
- (6) tabek ikan jo makan -an
 pond fish with eat -NOM
 'the fish with the food's pond'

Simpson (2005) makes a similar attempt to account for word order across Southeast Asian languages through movement. His theory for Indonesian-type languages relies on full phrasal movement at the NumP level. This allows for phrasal possessums, and it obtains proper ordering of all nodes of the possessum in relation to the demonstrative and possessor. However, because he generates both the possessor and the demonstrative in the D node, they are unable to cooccur.

(7) a.



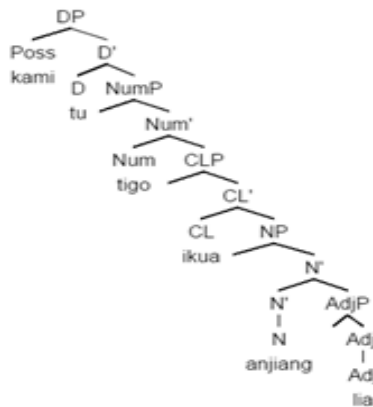
b.



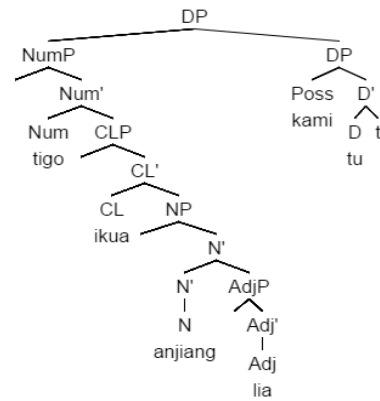
3 My theory

In order to account for all aspects of word order, scope, and consistency, a new theory is required. This theory ought to include certain aspects of many of the previous theories to account for various facts about the language: left-headed phrases for language internal consistency, possessors born in specifier of the DP for phrasal possessors, and phrasal movement that yields proper word order for phrasal possessums. This leads to a theory that operates as in 8, where the entire NumP moves to adjoin to the DP. The possessor generates as a DP in the [Spec,DP]. The NumP then moves up to adjoin to DP, yielding proper word order. Demonstratives are realized in the head of D, and thus cooccur with possessors. Poss generates in the leftmost specifier of the DP to allow for extraction should it be necessary—as it is in Indonesian (Jeoung 2016).

(8) a.



b.



My analysis presents a unified theory of the Indonesian-type DPs and considers the understudied Minangkabau. But more research is necessary to explore how possession works in other Indonesian-type languages, as well as further intricacies of possession in Minangkabau.

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GOALS

- Current theories about the structure of possession in Indonesian-type languages vary widely
- Most theories fail to account for data such as (1), which comes from Minangkabau but is a common structure within the Austronesian family

(1) tigo ikua anjiang lia kami tu (Min. Crouch 37)
three CL.tail dog wild 1.PL.EXCL DEM
'those three wild dogs of ours'

- This poster :
 - reviews current theories about possession in Indonesian-type languages
 - applies the theories to data from Minangkabau
 - suggests a new theory for the structure of possession in these languages

BACKGROUND

- Minangkabau has 6 million speakers in Western Sumatra, from the western part of Indonesia
- It is closely related to, although not mutually intelligible with, Indonesian
- DP surface order: Num CL N Adj RC Dem (Simpson 3)
- All uncited data is from a 19-year-old native speaker of Indonesian and Minangkabau

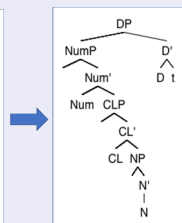
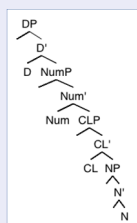
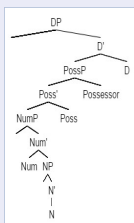
LITERATURE REVIEW

Loewen (2011)

- Assumes the existence of a PossP
- No movement
- Has some right-headed phrases

Simpson (2005)

- Phrase-movement creates proper word order
- Left-headed phrases

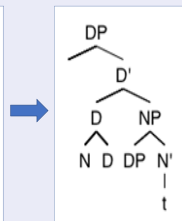
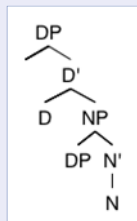
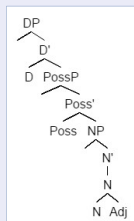


Davies and Dresser (2005)

- Uses PossP
- Adjectives are heads adjoined to N

Jeoung (2016)

- Uses head-movement to explain word order
- All left-headed phrases



POSSESSION IN MINANGKABAU

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Berkeley Linguistics Society 43rd Annual Conference

February 3-5, 2017

DATA FROM MINANGKABAU

Possessors and Demonstratives can cooccur:

(2) kareta-angin baru kami tu (Min. Marnita 3-23)
bicycle new 1.PL.EXCL DEM
'our new bicycle'

(3) tigo ikua anjiang lia kami tu (Min. Marnita 37)
three CL.tail dog wild 1.PL.EXCL DEM
'those three wild dogs of ours'

(4) kucing+ang+ko
cat+2.PL+DEM
'this cat of yours'

Possessors can be complete phrases:

(5) ka-duo inceh mato+nyo sakik (Min. Marnita 5-32)
CARD-two CL.seed eye+3.SG sick
'both his/her eyes are sick'

(6) tabek ikan jo makan-an
pond fish with eat-APPL
'the fish with the food's pond'

(7) aden ma-mamotong rambut kaaan adie+den
1.SG AV-cut hair friend sister+1.SG
'I cut my sister's friend's hair'

Possessors can be extracted (in related languages):

(8) Rumah Adi di-rata-kan kemarin (Ind. Jeoung 11a)
house Adi PV-flat-APPL yesterday
'Adi's house was destroyed yesterday'

(9) Adi yang rumah+nya di-rata-kan kemarin (Ind. Jeoung 11b)
Adi REL house+DEM PV-flat-APPL yesterday
'it was Adi that (his) house was destroyed yesterday'

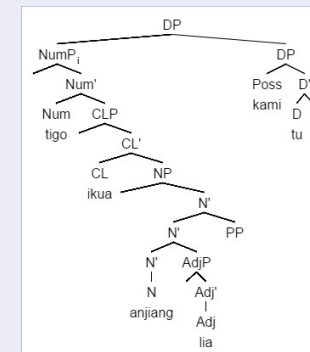
	General word-order	Possessors and demonstratives co-occur	Possessums with adjectives	Scope of possessors and demonstratives	Left-headed phrases
Simpson	Yes	No	Yes	No	Yes
Loewen	Yes	Yes	Yes	Yes	No
Jeoung	No	Yes	No	Yes	Yes
Davies and Dresser	No	Yes	Yes	No	Yes
My theory	Yes	Yes	Yes	Yes	Yes

PROPOSAL

- My theory should account for:
 - Left-headed phrases for language-internal consistency
 - Possessors born in specifier of the DP for phrasal possessors
 - Adjectives are full phrases for conjunction
 - Phrase movement yields proper word order, rather than head movement, for movement of phrases that consist of more than simply a noun
 - There is not a separate phrase dedicated to possession (no PossP) for simplicity of the theory

(10) [_{DP} Poss_{XP} Dem [_{NumP} Num CL NP]]

→ [_{DP} [_{NumP} Num CL NP]_i [_{DP} [Poss_{XP} Dem] t_i]]



FUTURE DIRECTIONS

- What is the function of linkers and ligatures *a la* Loewen

(11) anjing milik kamu+mu (Ind. Loewen 163a)
dog property 2.SG
'your dog'
[LIT. 'the dog owned by you']

- I am not currently aware of any evidence that these exist in Minangkabau. The existence of linkers or ligatures in Minangkabau could provide support for a dedicated PossP.

- What is the exact status of adjectives in Minangkabau

- How many are allowed? Are they heads or phrases? The literature on this varies widely.

(12) bola biru kuning gadang+den
ball blue yellow big+1.SG
'My big, blue, and yellow ball'

Crouch, S. (2009). *The Discourse and Pragmatic Effects on Voice and Verbal Morphology in Minangkabau* (Doctoral dissertation, MA thesis, University of Western Australia).

Davies, William and Craig Dresser. "The structure of Javanese and Madurese Determiner Phrases." *UCLA WORKING PAPERS IN LINGUISTICS* 12 (2005): 57-72

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Abbreviations: CL=classifier, 1/2/3.SG/plural=1st/2nd/3rd person singular/plural, DEM=Demonstrative, EXCL=Exclusive, CARD/Num=Cardinality, APPL=Applicative, REL=Relativizer, A/PV=Active/Passive Voice

Language exposure modulates the role of tone in perception and long-term memory: Evidence from Cantonese native and heritage speakers

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1 Cantonese heritage speakers

Given their second language (L2) dominance over their first (L1), HERITAGE SPEAKERS (HSs) are unique outliers to the traditional scenario where the language learned at birth is the one speakers continue to be dominant in into adulthood. HSs are typically children of immigrant families who learn their parents' language first, the HERITAGE LANGUAGE (HL), but later acquire greater proficiency in the majority language of the wider community as an L2 (Valdés 2000, Montrul 2011). Though HSs are a growing population in multilingual societies, little is known about their proficiency in the HL. The present paper examines the perception and production of lexical tone in Cantonese HSs.

While early language experience has been shown to give HSs an advantage over adult L2 learners of the HL (Oh et. al. 2003), HSs also underperform relative to NATIVE SPEAKERS (NS) due to category assimilation between the HL and L2 (MacKay et. al. 2001). To date, there is no account for HS proficiency for a linguistic feature of the HL that does not exist in the L2. As such, does the lack of an assimilatory target for the HL feature in the L2 help or hinder HSs in maintaining this particular feature? This is the case for HSs of tone languages, such as Cantonese, who must maintain lexical tone in the HL, when it is not used in a more dominant L2, such as English.

^{*} We would like to thank Diana Archangeli and Stephen Matthews from Hong Kong University and Alexei Kochetov from the University of Toronto for facilities support. This paper benefitted greatly from the comments made by audiences at the 2016 Southern California Undergraduate Linguistics Conference, the 2016 Cornell Undergraduate Linguistics Conference, and the 43rd Annual Meeting of the Berkeley Linguistics Society. We are especially grateful to Janessa Tam, Michelle Chui, Alex Chu and Jessica Yeung for their help in data collection and Connie Ting, Fion Chu and members of the UTSC Linguistics Laboratory for ongoing support. This research was funded by SSHRC Insight Development Grant (#430-2015-00647) awarded to Philip J. Monahan and a University of Toronto Scarborough Student Conference Travel Grant awarded to Rachel Soo.

2 Tone acquisition versus tone perception

Cantonese is a tone language that makes use of six tones on open syllables to differentiate words (Figure 1A). Perceptual sensitivity to tone is acquired early, around 4 months (Yeung et. al. 2013). This is well before HSs become dominant in the L2 (Kondo-Brown 2006). Therefore, we might expect tone perception to be robust even after HSs lose dominance in their L1. Conversely, tone is the least robust cue in spoken word recognition compared with consonants and vowels even for NSs (Tsang & Hoosain 1979, Taft & Chen 1992, Cutler & Chen, 1997, Weiner & Turnbull 2015). This conflict between the age at which tone is acquired and its relative salience in word recognition poses an interesting problem for speech perception and sheds light on how much more there is to learn about tone language HSs and HS phonology more generally. To the best of our knowledge, the current paper is the first to address this niche with quantitative data by investigating tone sensitivity during spoken-word recognition in Cantonese HSs. Since the more dominant L2 does not readily utilize tone, we hypothesize that Cantonese HSs may use tone less reliably in word recognition relative to NSs for whom tone is already a weak cue.

3 Tone production and AX discrimination

A tone production task and AX discrimination task were conducted to collect primary data on how Cantonese HSs differ from Cantonese NSs.

3.1 Participants

21 HS (17 female, mean age = 22.4) and 21 NS (12 female, mean age = 23.3)¹ were recruited from the University of Toronto and Hong Kong University, respectively. All participants completed a *Bilingual Language Profile* (BLP) questionnaire, which provides a relative weighting of language dominance (Birdsong et. al. 2012)².

¹ All participants conformed to specific eligibility requirements, reported normal speech, hearing, and vision, were compensated for participation and provided informed written consent prior to taking part in the experiment.

² A negative score indicates Cantonese dominance, while a positive score indicates English dominance. All NSs scored negatively (mean = -97.91) and all HSs scored positively (mean = 69.31).

3.2 Production methods and results

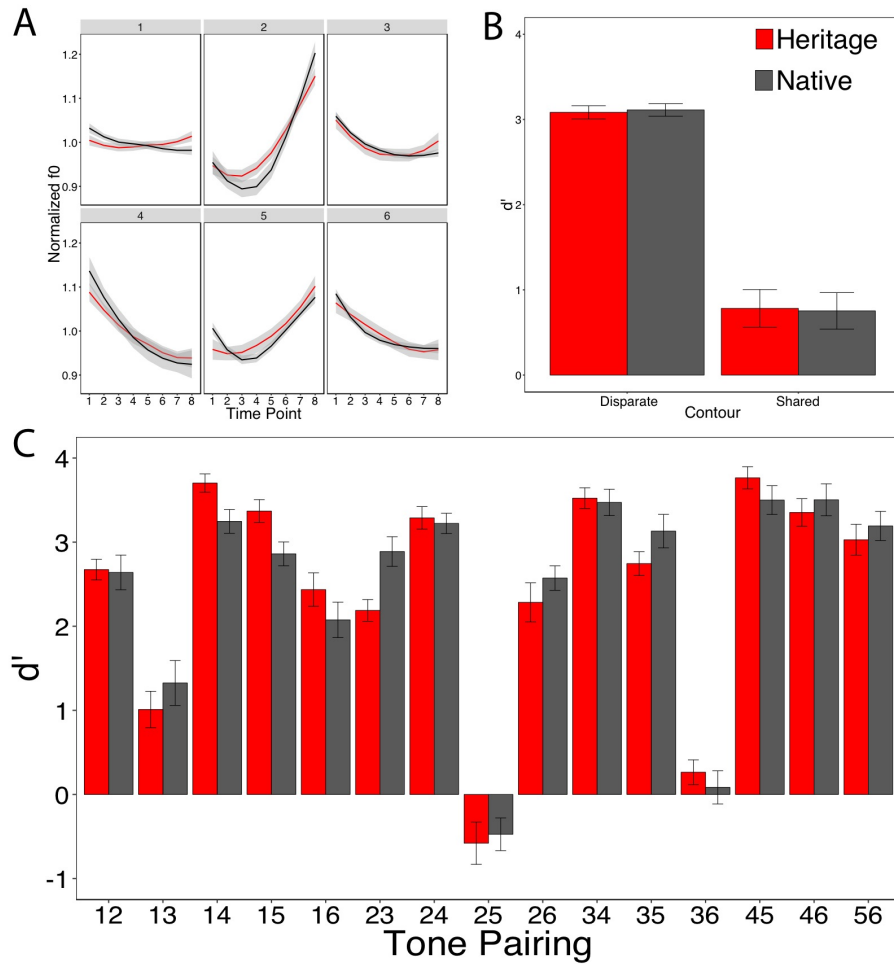
Participants were recorded producing three repetitions of six Cantonese tone minimal pairs in /a i o/ vowel conditions³. All instructions were provided in Cantonese for NSs. HSs were instructed in English and provided with a Romanization and English translation alongside the Chinese character during elicitation. Recordings were made with an *Audio Technica 2050* multi-pattern condenser microphone on a *Zoom H4N* digital voice recorder with a sampling rate of 44.1 kHz and 16-bit depth.

Individual word tokens were segmented in *Praat* (Boersma & Weenink 2015). Pitch (Hz) was extracted at 8 equally spaced points throughout the duration of the word and then normalized⁴. Figure 1A presents the pitch contours for all six Cantonese tones. Overall, HSs produced tones similar to NSs. The mean contours for each group overlap and match the flat, rising, and falling slopes as appropriate for the respective tones.

³ 3 vowel conditions \times 6 tones \times 3 repetitions = 54 tokens per speaker.

⁴ Each token's average pitch across the contour was subtracted from each of the eight individual points to eliminate inter-speaker variation (Khouw & Ciocca 2007).

Figure 1: Panel A: Heritage speaker (red) and native speaker (black) tone contours in the production experiment. Panel B: d' scores categorized by tone contours (shared or disparate) in the AX discrimination task. Panel C: d' scores separated by tone pairings in the AX discrimination task. All error bars and shading reflect standard error of the mean.



3.3 AX discrimination methods and results

On each trial in the AX discrimination task, participants listened to a pair of the Cantonese syllable /ji/ with either the same or different tone produced by a male and female NS. The inter-stimulus interval (ISI) was 500 ms. Participants made same-different judgements via button press. The inter-trial interval (ITI) was 1000 ms.

D-prime (d') scores (Macmillan & Creelman 2005) were calculated for each of the 15 possible tone pairings. By-participant reaction times greater than or less than 2.5 standard deviations of the individual subject means were removed (3.1% of the total data). As with the production experiment, HSs perform similar to NSs (Figure 1C). More specifically, the two groups discriminate tone pairings with disparate contours well (e.g., flat-falling pair 1-4) and those with shared contours poorly (e.g., rising-rising pair 2-5; Figure 1B). There was a main effect of Contour ($F(1,40) = 551.53, p < 0.001$) but no effect of Group or a Contour \times Group interaction ($F < 1$).

While it is somewhat surprising that HSs perform so native-like in a perception task, we suggest that the similarities between the two groups can be explained by the demands of the task itself. Previous studies have shown that at short ISIs, speakers only need to retain phonetic information in short-term memory and tap into phonetic-perceptual level processing (Werker & Logan 1985). Therefore, the success of HSs in approximating NS performance can be attributed to the fact that both groups have access to a phonetic-perceptual level of processing for tones in an AX discrimination task with short ISIs. If it is true that HSs do not robustly encode tone on a more abstract-phonological level, we expect them to perform worse than NSs in tasks that require long-term memory or phonological levels of processing.

4 MDRP

To test this hypothesis, we performed a MEDIUM-DISTANCE REPETITION PRIMING (MDRP) experiment, which can reveal differences between highly-proficient groups of bilinguals (Pallier et al. 2001).

4.1 Methods

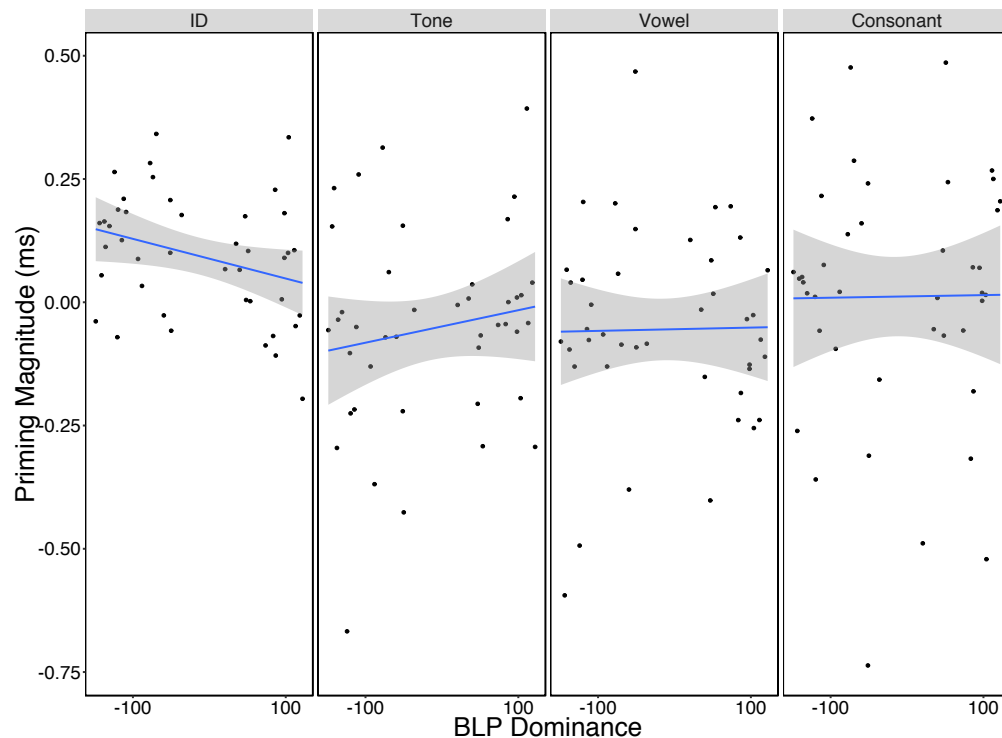
The same 21 HSs and 21 NSs listened to monosyllabic Cantonese words ($n = 98$) and non-words ($n = 98$) in isolation and made a lexical decision response on each trial. Items were either repeated (identity pairs: *be2-be2*) or followed by their corresponding minimal pair (minimal pairs: *be2-be5*) differing in a single Cue (Consonant, Vowel, Tone) 8 to 20 trials later. Words were matched for token frequency by condition using *PyCantonese* (Lee 2015).

Since stimuli pairs are separated across a medium distance (8-20 trials), listeners must rely on long-term memory and tap into abstract levels of representation (Pallier et al. 2001, Sumner & Samuel 2009). In this regard, if HSs do not have robust tonal representations at a more abstract level of representation, they will not experience identity priming across medium distances and will not appropriately distinguish minimal pairs.

4.2 Analysis and results

Figure 2 provides priming magnitudes against BLP dominance scores. Priming magnitude was calculated for each pair by subtracting the reaction time (RT) to the second item (*be2-be5*) from the RT to the first item (*be2-be5*). A positive priming magnitude indicates that the second item is primed by the first.

Figure 2: BLP dominance scores plotted against priming magnitude in identity priming conditions (collapsed across Cue) and minimal pair priming conditions (separated by Cue).



There is a negative correlation between language dominance and priming magnitude for the identity pairs ($t(40) = -2.07$, $p < 0.05$, $r = -0.31$); namely the more English dominant the speaker, the less priming they show across medium distances. This lack of priming suggests that

speakers for whom English is the more dominant language are unable to hold tonal information in memory long enough to be primed by the time that the second identity pair is presented. Similarly, there is a non-significant but positive trend in the tone minimal pair case ($r = 0.16$): the more English dominant the speaker, the more priming there is across medium distances, indicating that tonal representations are weak and easily confusable. Since minimal pair priming does not extend across medium distances, participants are likely mistaking the second minimal pair for being a repetition of the first, as if it were identity priming. These findings point toward the lack of strong tonal representations for English dominant speakers at an abstract-phonological level.

5 Conclusions

The goals of the present study were two-fold: a) to provide primary data on Cantonese HS production and perception of tone, and b) to investigate tone sensitivity during spoken-word recognition. We compared Cantonese HSs with Cantonese NSs in a production and AX experiment and showed that HSs perform similarly to NSs. We argued that this is due to the nature of the AX discrimination task, which does not rely on long-term phonological representations. Using a task that taps into such representations (i.e., MDRP), we found data in favour of a fossilized tone-system due to minimal exposure to the tone L1 (Cantonese), as the tone-less L2 (English) becomes more dominant. Ultimately, it appears that differing degrees of language exposure affect the levels at which tone representations can be accessed and stored during perception and spoken-word recognition. HSs who have less exposure are consequently only able to access linguistic cues at a phonetic-perceptual level and not at an abstract-phonological level.

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1. Background

- Argument structure contributes significantly to syntactic, semantic, and morphological processes.
- Variation in argument structure contributes to unique dialectal meanings
- Southern English has three well documented double object/applicatives constructions:

DITRANSTIVE CONSTRUCTION

(1) John gave Mary the book

BENEFACTIVE CONSTRUCTION

(2) John sang the children a song

SUBJECT CO-REFERENTIAL APPLICATIVE (also called "Personal Dative")

(3) I want me some french fries

- This poster seeks to clarify the structure, argument licensing, and usage of these constructions in Southern English

2. Hypotheses

- V assigns lexical case to its complement in double object constructions
- The applicative head assigns case in the same way as agentive v for benefactives and Subject Co-Referential (SCR) applicatives
- Benefactives and SCR appls. are high applicatives which do not necessarily form a scene of transfer of possession

3. Ditransitive Construction

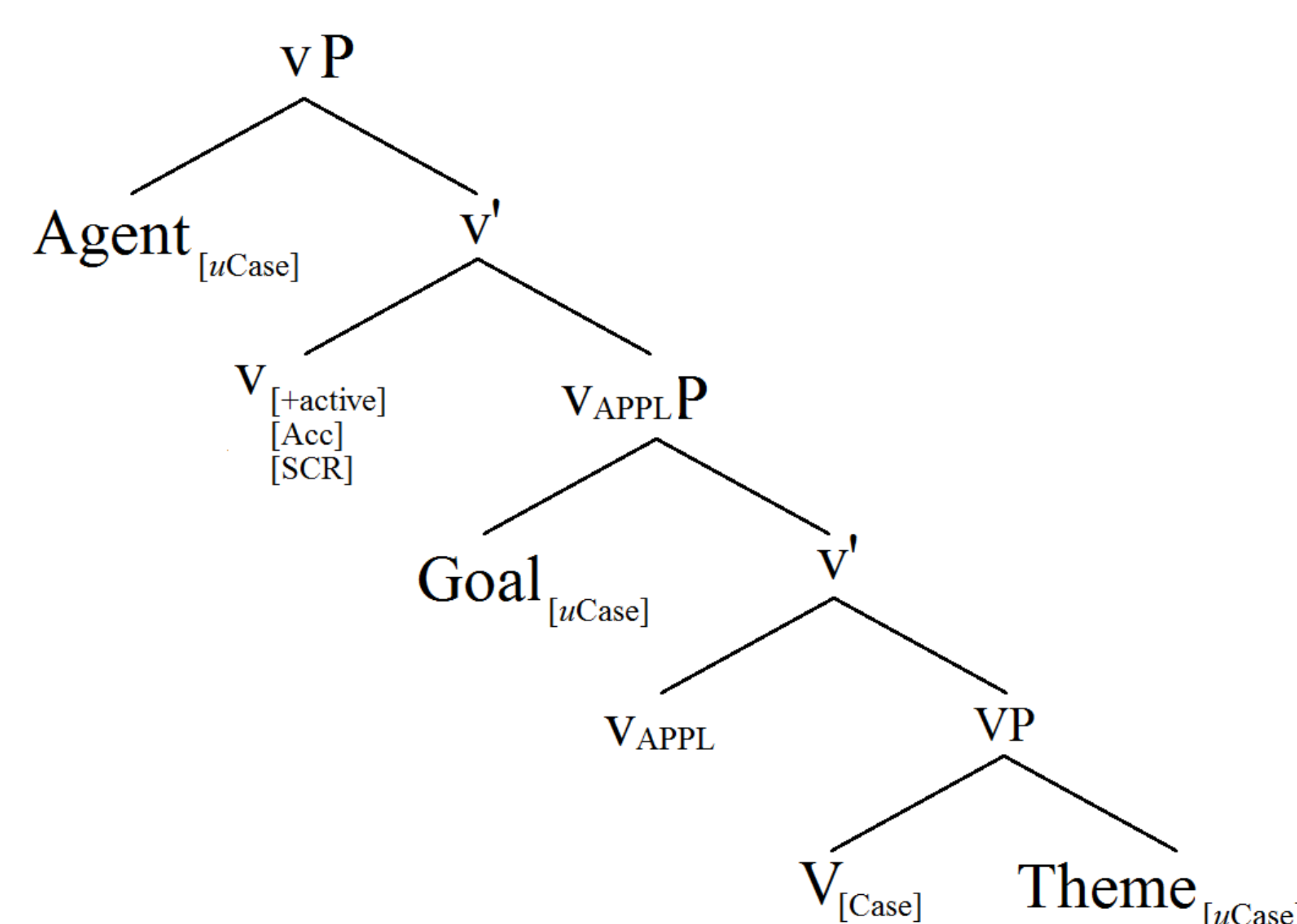


Figure (1) adapted from Anagnostopoulou (2003) and Bruening (2010)

- Lexical case on V ensures theme is licensed properly
- Lexical case is a feature only on a small number of true ditransitives verbs (i.e. give). Available only to small set of true ditransitive Vs like *give* and *lend*.

4. Benefactive Construction

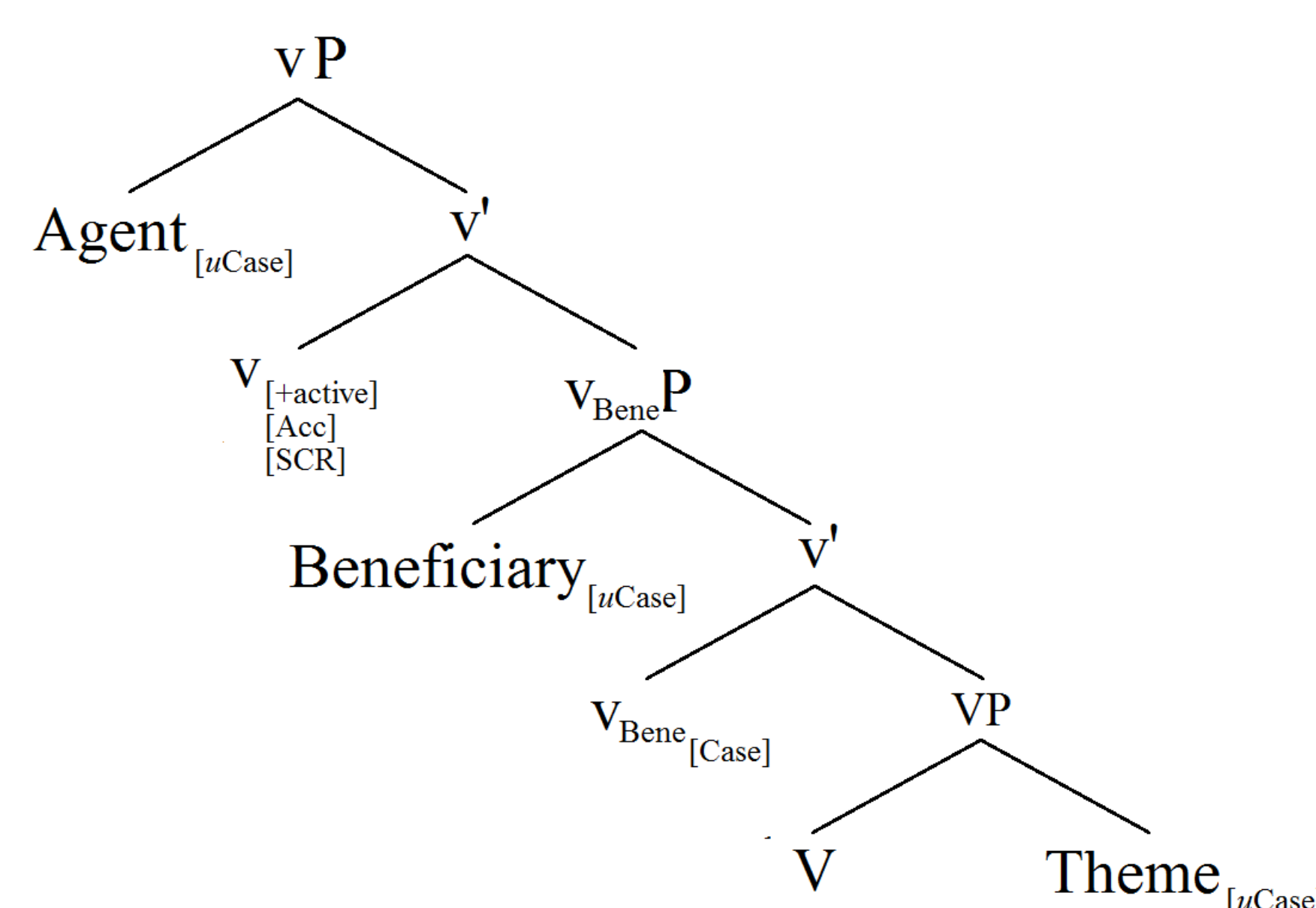


Figure (2) adapted from Bosse (2015)

- Benefactive verbs should not assign lexical case
- Case is assigned by v_{bene} with the same timing as accusative case on agentive v
- Accounts for the structural case alternation

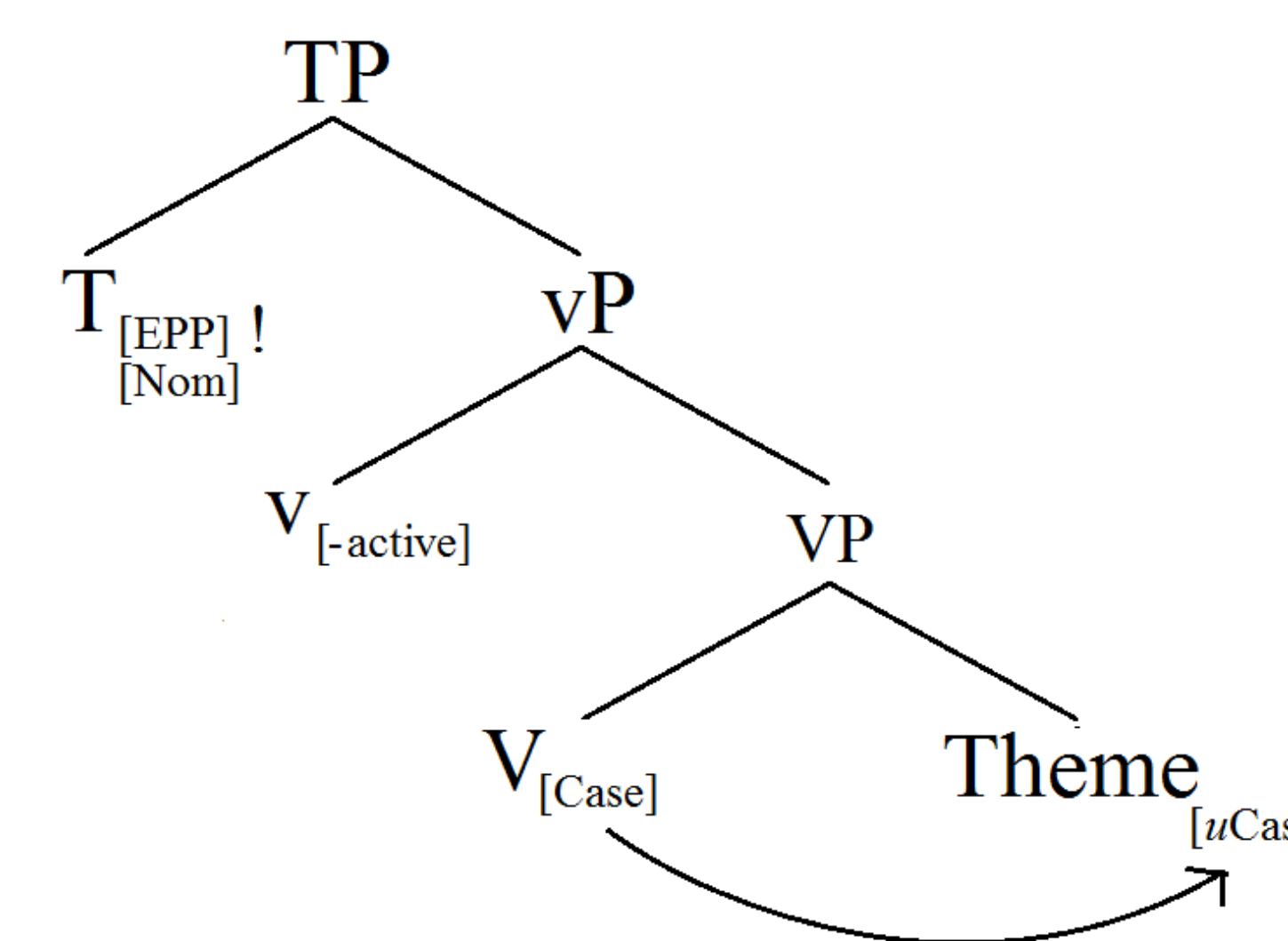


Figure (3): Why lexical case on V can't account for benefactives

5. Subject Co-Referential Applicative

- Further explained in right column
 - Additional examples:
- (4) I'm gonna sit me down
(5) I never did like me bacon
(6) He hates him bacon
(7) I caught me a fish for my sister

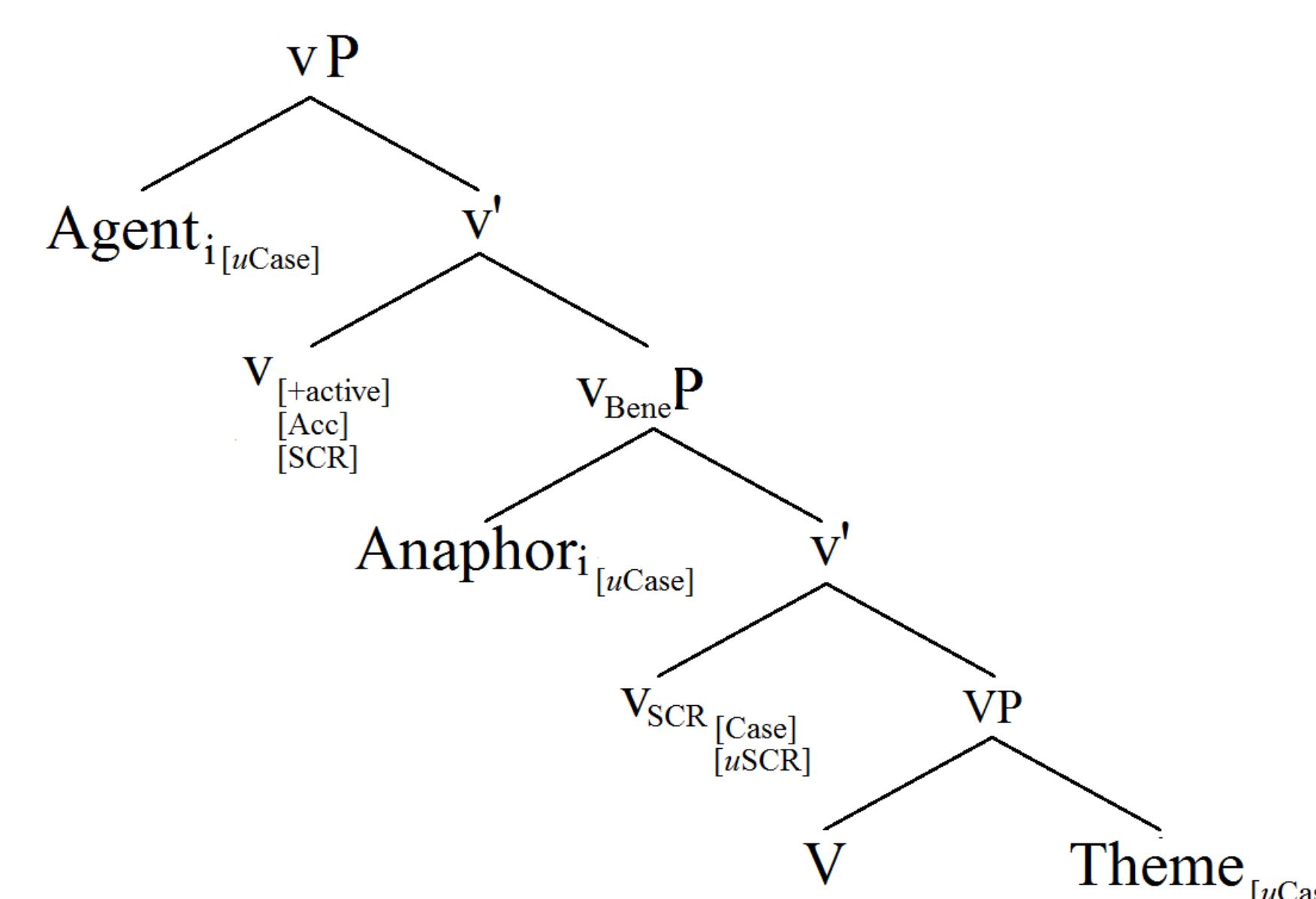


Figure (4): adapted from Bosse (2015)

6. SCR Applicatives (continued)

- Feature common in Southern and Appalachian English
- Cannot occur with passive or unaccusative verbs
- Can occur with transitive and unergative verbs
- [SCR] on all active v/Voice heads
- Checks corresponding feature on the applicative head
- Case assigned similarly as in benefactive constructions
- 'Personal Dative' probably receives accusative case, though it is impossible to test

7. Conclusions and Outlook

- Case features on double object and benefactives clear, although likely different configurations
- Unable to test SCR case, though likely analogous to benefactive
- What's Next? Provide semantic analysis to complement syntax

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