JournalLing

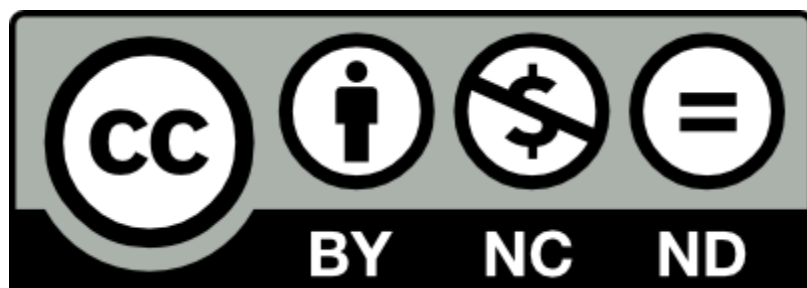**Undergraduate Linguistics Journal**

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JournalLing is based in Montreal, which is situated on the traditional unceded territory of the Kanien'kehà:ka, a place which has long served as a site of meeting and exchange amongst nations. JournalLing recognizes and respects the Kanien'kehà:ka as the traditional custodians of the lands and waters on which our journal operates.

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Foreword

This is the first iteration of an undergraduate Linguistics research journal at McGill since the now-defunct *Cellar Door* published its last edition in 2015.

Linguistics is a relatively young field of study, rare in allowing undergraduate students to directly contribute novel research to its numerous subfields. We wanted to provide a place for McGill's Linguistics undergraduates to showcase such research, and for students, faculty, and anyone else interested to keep up to date on the excellent work being produced every year.

In 2019, members of the Society of Linguistics Undergraduates at McGill and volunteers within the department formed an editorial team to found *JournalLing*. Building the journal from scratch was an imperfect process involving trial and error, late nights, and innumerable last-minute Zoom meetings, all of us learning our roles as we went along. But through the diligence and tireless efforts of our editorial team, the authors, and everyone else involved, we have created a finished product we're all very proud of.

The inaugural publication of *JournalLing* exhibits the broad and multifaceted nature of our program. Our nine selected papers include both original research and literature reviews, representing a variety of linguistic domains from sociolinguistics to phonology to syntax. We hope that these are the first in a long tradition of insightful and fascinating papers showcased by future editions of *JournalLing*.

Benjamin Foster and Celeste Jensen
Co-Editors-in-Chief, JournalLing 2020

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Echo of the Highlands: A Linguistic Analysis of Cape Breton English Past, Present, and Future

Mathieu Hergett-Rozier

Abstract

The island of Cape Breton off the coast of mainland Nova Scotia has a unique and varied culture and history. Over the centuries, it has served as a home to Mi'kmaw, French, Celtic, and English inhabitants. As a result, the linguistic status of Cape Breton is complex and diverse, and the variety of English spoken on the island reveals multiple layers of interwoven cultural and linguistic contact and admixture. Although there exists literature on specific aspects of Cape Breton English, none (as of yet) has supplied a unified account of the dialect or its origins. This paper provides an explanation of the dialect's origins through analysis of the region's settlement history, as well as its linguistic features. Finally, this paper evaluates the relationship between Cape Breton English and Standard Canadian English to speculate on its future.

1 Introduction

The island of Cape Breton, lying just northwest of the Nova Scotian mainland, is a naturally stunning region, whose history has been built by the fishing, forestry, and coal mining industries. Though Cape Breton bears strong political and economic connections to the mainland today and requires only a short drive across the Canso Causeway to reach it, the island has long been considered remote and distinct, differing greatly from the mainland in respect to geography, culture, and history. This is not to say there are no shared features between the island and the mainland, but instead that it possesses its own unique identity, built by the Mi'kmaq, Acadians, Loyalists, Scottish, and Irish alike.

The character and origin of Cape Breton English is highly contested. While some authors, such as Rowe (1968) and Gardner (2013, 2017), tend to make arguments for a predominantly Loyalist origin and associate it closely with Maritime and New England English, minimizing Celtic influences, others, such as Kiefte and Kay-Raining Bird (2010), argue that Celtic influences from Scottish Gaelic and Irish English have had a significant historical effect upon the dialect. What is certain is the admixture and diffusion of the languages and dialects of the aforementioned ethnic groups have led to the development of a unique speech enclave (Boberg, 2010: 26).

This paper will first recount the settlement history and historical sociolinguistic contact situations of Cape Breton, then demonstrate the specific contributions of each settlement group to demonstrate their influences upon the development of the Cape Breton dialect. Finally, it will analyze the current status of the dialect, and its future, given current phenomena of local outmigration, foreign immigration, and modernization.

2 Settlement History

2.1 The Mi'kmaq

The progenitors of the Mi'kmaq people were the first to inhabit Cape Breton Island, likely arriving around 11,000 BP (Davey and Mackinnon, 2016). The population was estimated to amount to 230 individuals by 1774, roughly 20% of the island's population at the time (Landry, 2009). In spite of their long history and contact with Europeans, I can find no research to suggest the Mi'kmaq or their language have had any discernible impact upon the development of Cape Breton English.

2.2 The Acadians

Cape Breton (known to the French as Ile Royale) possessed no permanent settlements until after the Treaty of Utrecht (1713) (Canadian Encyclopedia), which obligated the French to cede all territory in mainland Nova Scotia and New Brunswick to the British crown. In response, the French quickly constructed the Fortress of Louisbourg and Cape Breton boasted an Acadian population of over 4000 by 1752 (Recensements d'Acadie). In 1758, the fortress of Louisbourg fell to the British during the Seven Years War and most of the French population was expelled.

After colonial hostilities between the French and British had ended, many Acadians returned and settled along the coast (Kiefte & Kay-Raining Bird, 2010, 60). Aside from donating various lexical items, the Acadians did not make significant contributions to the development of Cape Breton English.

2.3   The Irish Newfoundlanders

Beginning in the late 16th century, many English-speaking Irish and West English fishermen flocked to Newfoundland in hopes of profiting from the cod fisheries (Boberg, 2010: 58). However, conditions in Newfoundland were harsh, resources scarce, and geography isolating. Additionally, permanent settlement was prohibited by the British government, though small semi-permanent settlements did appear in Newfoundland (58). After the construction of Louisbourg, a few hundred of the ethnic Irish Catholic fishermen operating in Newfoundland, who were no fans of the British, were permitted to establish their own fishing communities on the island (Gardner, 2017: 17). These Irish communities appear to have been unaffected during the various Anglo-French conflicts of the 18th century. When British forces finally spread their dominion to Cape Breton, the Irish population was allowed to remain, in spite of a ban on settlement (Morgan, 1997: 57). The Irish-Newfoundlanders represented the first English speaking population to inhabit Cape Breton Island and had a significant impact upon the development of Cape Breton English, donating various lexical items, grammatical constructions, and phonological features, relating the Cape Breton dialect closely to that of Newfoundland.

2.4   The Loyalists

Following the Acadian expulsion in the 1760s, settlement of Cape Breton Island was prohibited by British authorities (Canadian Encyclopedia). Subsequently, Cape Breton did not receive any of the New England Planters that flooded Nova Scotia after the expulsion (Gardner, 2017: 18). Immigration to Cape Breton was reinstated in 1784, when it was established as a separate colony intended for settlement by American Loyalists who had fled the United States (Canadian Encyclopedia). Loyalists numbered around 400 in Cape Breton (Boberg: 62).

The arrival of the Loyalists presented a major upset to the ethno-sociolinguistic status of the island (Gardner, 2017: 19). Linguistically, sources seem to imply that the Loyalist dialect differed greatly from the Irish dialect, perhaps because the majority, according to Boberg (2010: 101), were of English heritage. Socially, the Loyalists possessed wealth and education, while the Irish lacked both, and as a result, the Irish dialect became associated with poverty and vernacular culture, whereas the Loyalist dialect became associated with upward mobility, resulting in a "social dichotomy" (Gardner, 2017: 19).

Loyalist settlement is the common link between Cape Breton English and standard Canadian English, being one of the foundational elements of the latter as well. I would argue it is quite possible that the "Canadian" features we see on the island are of Loyalist origin, for without the Loyalist influence, I can imagine Cape Breton speech would be much more similar to that of Newfoundland, which lacked any meaningful Loyalist influence (Boberg, 2010: 100).

2.5   The Scottish

Gaelic speaking Highland Scots represent the most culturally and linguistically influential non-anglophone immigrant group of Cape Breton. The Highland Clearances caused the internal displacement of thousands throughout the Scottish Highlands while the British Industrial Revolution instigated widespread poverty due to the collapse of cottage industries (Boberg, 2017: 67). As a result, many Scots sought a better quality of life elsewhere. Cape Breton, which possessed a similar topography to the Scottish Highlands presented an excellent choice. The first 340 Highlanders arrived in 1802 (65), and by the mid 19th century, over 30,000 Highland and Hebridean Scots settled in Cape Breton (Morgan, 1997: 113). These Gaelic speaking Scots vastly outnumbered the existing populations and became the dominant ethnic group. However, their numbers, relative poverty, and late arrival proved major barriers to their advancement (Gardner, 2017: 19). Scots received the most isolated and least fertile lands and were pushed to the bottom of the socioeconomic hierarchy thus becoming identified as "backlanders", a term which bore prejudiced social connotations (20). However, the Scottish found kindred spirits in their Celtic brethren—the Irish. Cultural similarities allowed for significant amalgamation of the two groups. The majority of Gaelic Scots continued to speak Gaelic throughout the 19th and early 20th centuries, though numbers began to wane due to social and political stigmas associated with the language (20). By the mid 20th century, native Gaelic speakers were quickly disappearing to the point that only 5 individuals identified it as the language most often spoken at home in 2016 (Statistics Canada). Despite their linguistic decline, the Scots brought their values, religion, rich folklore and music, and language with them, laying the foundation for what would become traditional Cape Breton culture

Though the Scottish population of Cape Breton spoke predominantly Gaelic, their influence upon Cape Breton English was significant. Many syntactic structures in the dialect are of Gaelic origin, as are many phonological patterns, not to mention numerous lexical items, as will be demonstrated.

3   The Ethnolinguistic Social Dynamic of 19th Century Cape Breton

By the mid 19th century, the foundational ethnic groups had firmly established themselves within Cape Breton society (Morgan, 1997: 192), and though there was some Eastern European immigration (Nova Scotia Archives), it does not seem to have had any major impact upon Cape Breton English.

The sociolinguistic hierarchy of 19th century Cape Breton was a decisive factor in the development of the modern dialect and is excellently described by Gardner (2017). Loyalists and their English formed the top of the social strata, while the Irish and their Celtic-influenced English fell to the middle, leaving the Scottish and their Gaelic language at the bottom. The Irish were the key force in uniting these languages, acting as interlocutors between the English Loyalists and the Gaelic Scots and subsequently spreading features of one group to another, while simultaneously introducing their own (20). This interlocution was a driving force behind the homogenization of the dialect.

The economy of 19ᵗʰ century Cape Breton was based upon forestry, fishing, and increasingly mining (Morgan, 2008: 129). From the mid 19ᵗʰ to the late 20ᵗʰ century, the mines and foundries were a driving force behind the cultural diffusion and evolution of Cape Breton (166). Mines were owned and operated by British and American companies and administered by the Loyalist elite, which reinforced the prestige of Loyalist English (Gardner, 2017: 23). The great linguistic variety seen today, however, is likely a result of what took place in the mines. There, men of all ethnic origins toiled, ate, and died alongside each other, sharing and mixing their culture and speech habits in the process, and further uniting the diverse ethnic groups of Cape Breton (23). Due to the linguistic variety of the period, I would argue that English played the role of a lingua franca, with various lexical items, phonological features, and grammatical structures entering it from these diverse inputs.

4   Local Features of Cape Breton English

The multiplex language contact situation in Cape Breton has led to the formation of a distinct dialect in the Canadian context. The various settlement groups have made contributions to the vocabulary, phonology, and grammar of Cape Breton English that have led to the development of many local non-standard forms, though some groups have had more of an impact than others.

4.1   Vocabulary

The local vocabulary of Cape Breton is likely best described by Davey and MacKinnon (2016) who recorded several hundred terms in their *Dictionary of Cape Breton English*. The authors identified terms of Mi'kmaq, Acadian, Irish, and Gaelic origin, entering the most well known and frequently used of these into the dictionary.

Integration and assimilation caused the widespread disappearance of Mi'kmaq culture and language on Cape Breton island. However, cultural terms and place names have managed to survive in the form of English loanwords. Examples include *L'nu*, a Mi'kmaq person (94), and *Unama'ki*, the Mi'kmaq name for Cape Breton (182).

Although Acadian French has had no other discernible influences upon Cape Breton English, a wide variety of French terms have entered the English dialect. Though place names and cultural terms represent a great number of Acadian loanwords, they are not limited to these domains. French loanwords include everyday words such as *Les suetes*, characteristic Cape Breton southwest winds (170), and *Cabbane*, a fishing shack (27).

There are many terms of Irish origin found in Cape Breton that occur nowhere else but Newfoundland due to their shared heritage, such as *b'y*, meaning a boy or guy (27), and *Omadhun*, an idiot (111). Many of these are fishing terms such as the verb *make fish*, to preserve fish (99).

There are 51 recorded Gaelic loanwords in Cape Breton English from various domains including folklore, music, food, greetings, insults, religion, and domestic life, among others. Specific examples range from *Ceilidh*, an intimate household party (31), to *Strupag*, a meal

consisting of tea and snacks (169). Loanwords are not limited to nouns, but also include adjectives such as *mozy*, dank, and *dubh*, dark.

4.2 Phonology

A few authors such as Shaw (1997), Falk (1989), Keifte and Kay-Raining Bird (2010) and Gardner (2013, 2016) have made observations of the phonology of Cape Breton. They all agree that while Cape Breton English is a phonologically Canadian variety, there are many local features that draw from Celtic and perhaps Loyalist sources.

Although there is consensus among scholars that Loyalists had a strong influence upon Cape Breton phonology, and that this is the reason for the sharing of non-standard forms between Cape Breton and the rest of the Maritimes (Gardner, 2017: 32), (Kiefte & Kay-Raining Bird), there appears to be very little literature concerning specific variables aside from the observation of stylistic differences in the pronunciation of the LOT and THOUGHT vowels (Gardner & Roeder, 2013).

Goidelic influences, via either Newfoundland Irish English or Scottish Gaelic, also present themselves in Cape Breton phonology, though the ultimate sources cannot be conclusively determined in some cases due to the similarities between Gaelic and Irish. These include a slit fricative in place of word final stops (Kiefte & Kay-Raining Bird, 2010: 68), a common feature in Goidelic languages (Gardner, 2017: 32) and fronting of the low back vowels), both of which are also found in Newfoundland (Kiefte & Kay-Raining Bird: 68).

Some features, however, can indeed be directly attributed to Highland Gaelic. Cape Bretoners are known to often use the "Gaelic gasp" pulmonic ingression (Gouthro, 2015), which is also found in highland Gaelic (Thom 2005: 8). Shaw (1998) made numerous observations regarding Cape Breton phonology that derive from Scottish Gaelic. He noted frequent use of preaspiration, nasalization of vowels before and after nasal consonants, and palatalization of [k] and [g] in initial and final positions. In addition, he noted the replacement of /s/ in environments where /z/ would be found in standard variety, attributing it to the lack of voiced sibilants in Gaelic (Shaw, 1997: 313). I would also argue that the monophthongization of the FACE and GOAT vowels observed by Kiefte & Kay-Raining Bird (2010: 68) can be attributed to Gaelic phonology, which does not possess the diphthongs normally found in those phonetic environments (Green, 1997).

4.3 Grammar

Though the grammar of Cape Breton English is largely similar to that of the rest of Canada, there are some notable local features. Falk (1989), Gardner (2017), and Shaw (1997) have all done extensive research on the subject. The most frequently used non-standard grammatical forms are of Loyalist origin, though there are some common grammatical features of Goidelic origin that have been transplanted into English.

Gardner (2017) recorded the occurrence of nonstandard Loyalist forms in the domains of the stative possessive ("have got" is preferred over "have"), deontic modality ("have got to" is used instead of "need to" or "must"), and the future temporal reference ("be going to" preferred

over "will") which can all be traced to the Loyalists due the occurrence of the phenomena in rural Ontario speech.

In terms of Gaelic influence, Falk (1989) observed the use of "since" with negated particles ("It's been a long time since I haven't seen you") and subject-relative pronoun deletion in existential clauses ("there was bad things (that) happened there"), which can both be traced to the grammar of Scottish Gaelic. Another feature, the after perfect ("I am just after going to town" instead of "I just got back from town"), is more likely to have entered via Newfoundland Irish English. Subject topicalization ("My cousin *he* made all kind of knots") also occurs and may derive from either French or Gaelic influence. Shaw (1997) noted syntactic constructions borrowed from Gaelic, specifically the positioning of adverbs in a phrase. For example, in order to emphasize an adverb, Gaelic places the pronoun before the verb, thus producing phrases such as "Very seldom I would kill a calf.", as opposed to the standard English "Very seldom would I kill a calf." (Shaw 314).

5 The Current Status of Cape Breton English and its Future

It is a reality that the linguistic and cultural influence of historical settlement in Cape Breton have waned over time. Gaelic is virtually extinct and rates of Mi'kmaq and French are rapidly declining (Statistics Canada). In addition, Cape Bretoners are being exposed to standard varieties of English through media, education, and seasonal migration. However, although there is evidence that the dialect is approaching the Canadian standard (Kiefte & Kay-Raining Bird: 2010) indicated by phenomena such as adoption of Canadian Raising and the Canadian Shift, the shift is not as far along as one might expect. It is "…one of quantity, not kind." (Gardner, 2017: 171). In fact, there are several factors that aid in the preservation of the culture and dialect.

The main source of exposure to standard Canadian English is through the contact that Cape Bretoners employed by the petrochemical industry of western Canada have with other Canadians (Kiefte & Kay-Raining Bird, 2010: 68). However, Cape Bretoners that migrate seasonally often emigrate (Shannon, 2014), which likely mitigates the effects upon the Cape Breton dialect. Additionally, Gardner & Roeder argue that the speakers of the most standard versions of Cape Breton English are usually of higher socioeconomic status and education and are therefore more likely to emigrate, while those of lower status are more conservative in their speech (2013: 168). Immigration, another potential source of standardization, is low in Cape Breton (Gardner, 2017: 7). I would also suggest that the strong cultural identity held by Cape Bretoners is likely to reinforce the conservation of the local dialect. Celtic Cape Bretoners continue to hold ceilidhs, participate in highland games, and take Galeic language courses at school; Acadian Cape Bretoners continue to live much of life speaking French and cooking rapure; and Mi'kmaw Cape Bretoners continue to hunt and share oral traditions, all while great effort is being put into revitalizing the Mi'kmaw Language. This strong sense of cultural identity, supported by Cape Breton's cultural tourism, language-planning efforts, geographic remoteness, rurality, and ethnic nationalism are likely to slow the adoption of standard forms and conserve the local dialect.

In conclusion, although there is historical evidence of Cape Breton English's convergence with Canadian English, it is not clear whether that change is ongoing. In addition, cultural attitudes and migration patterns have a preservative effect upon the dialect. Therefore, I would argue that Cape Breton English is likely to remain relatively unchanged, preserving the features of the foundational settlers, most notably those of the Scottish, Irish, and Loyalists.

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Serial Verb Constructions and Motion Events in Malagasy

Nathan Dwyer

Abstract

This article investigates how Malagasy, an Austronesia language of Madagascar, expresses path and manner in motion event expressions, and situates Malagasy within a motion event typology introduced by Talmy (1985) and expanded by Slobin (2004) and Zlatev & Yangklang (2004). I argue that Malagasy is a verb-framed language within Talmy's (1991) verb framing/satellite-framing typology. I examine Malagasy dual-verb constructions and show points of comparison and contrast to canonical serial verb constructions (SVCs). While it is debatable whether Malagasy dual-verb constructions are legitimate SVCs, I argue that Malagasy does not align with a third category unique to SVC languages proposed by Slobin (2004) and Zlatev & Yangklang (2004), but instead behaves as a verb-framed language. Additionally, I examine a phenomenon in verb-framed languages whereby the telicity of a path phrase changes depending on whether the associated verb is a path verb. Consequently, I propose a new definition of the *boundary-crossing constraint*. This article constitutes the first investigation of Malagasy motion event expressions in comparison with SVC languages and its findings motivate a reconsideration of presumed universal properties of motion event expressions in SVC languages.

1 Background

According to Leonard Talmy's (1985) typology of motion events, verbs of motion in a given language will either encode the manner of motion or the path of motion, but not both. Whichever piece of information (manner or path) is not encoded in the main verb of a motion expression will either be left out or expressed using some other element, such as a participle. This distinction can be seen in comparing the following example from Spanish to its English translation (adapted from Talmy, 1985:69):

(1)   *La botella pasó   por la piedra (flotando)*
        the bottle passed by the rock   (floating)
        'The bottle floated past the rock.'

In Spanish, the main verb *pasó* 'passed' encodes the path of motion (in addition to the fact of motion). The manner of motion is optionally included using a participle, *flotando* 'floating'. In English, however, the main verb 'floated' encodes the manner of motion. Thus, Spanish is a path language and English is a manner language.

In a later work, Talmy (1991) introduces the related concept of verb-framed languages and satellite-framed languages. He claims that "languages fall into two typological categories on the basis of where they characteristically express the schematic core of the framing event -- in the verb or in a satellite to the verb" (Talmy, 1991:480). In motion events, the "schematic core of the framing event" is the path of the motion. Thus path languages like Spanish are verb-framed, and manner languages like English are satellite-framed.

Recently, attention has been paid to languages with Serial Verb Constructions (SVCs) and their place in Talmy's typology. Languages exhibiting Serial Verb Constructions can have sentences with multiple consecutive verbs which are parallel in structure. In such a construction, no single verb can be distinguished as the main verb of the sentence; the meaning of the VP is derived from the verb complex as a whole. An example of a language that uses SVCs to express motion events is Vietnamese (Slobin & Hoiting, 1994:492):

(2)   *Lan chay vào   vuòn*
        Lan run enter garden
        'Lan ran into the garden.'

Opinions differ as to how such languages fit into Talmy's verb-framed/satellite-framed dichotomy. Slobin & Hoiting (1994) argue that SVC languages "can all be characterized as **complex verb-framed languages**, in contrast to the more familiar **simplex verb-framed languages** described by Talmy" (492, author's emphasis). In their 2004 study of motion event expressions in Thai, Zlatev & Yangklang offer a different analysis of languages with SVCs. They propose a third category (neither verb-framed nor satellite-framed), wherein "there is no syntactic or semantic evidence that either type [of motion verb] is subordinate to the other, and therefore they need to be given equal status" (Zlatev & Yangklang, 2004:161). Slobin (2004) concurs with Zlatev & Yangklang's assessment of SVC languages.

After the Malagasy data has been presented and discussed, I will revisit Zlatev & Yangklang (2004) and Slobin's (2004) proposal of a third category in section 3.

1.1 Serial Verb Constructions in Malagasy?

Malagasy exhibits constructions with two parallel verbs, as shown in the example below (adapted from Kalin & Keenan, 2011):

(3)   *M-ihinana   m-itsangana   Rabe*
             PRS-eat.AV PRS-stand.AV Rabe
             'Rabe eats (while) standing up.'

Here, the verbs 'eat' and 'stand' are structurally similar, both appearing as present tense verbs in the agent voice (Malagasy is a VOS language with a three-"voice" system, with different voices being used when the subject/trigger is an agent, patient, or instrument; see Pearson (2005)). The two verbs share a subject, *Rabe*.

It has been claimed that Malagasy is an SVC language that serializes over TP (such that serialized verbs can be negated and marked for tense independently of each other), while most (all?) other SVC languages serialize over VP or AgrP (Kalin & Keenan, 2011). In that case, it would be worthwhile to bring Malagasy data to bear on this debate about serial verb constructions and motion event typology, as Malagasy's use of this alternative serializing strategy offers a potentially different perspective on suspected SVC-language universals.

However, it is debatable whether Malagasy constructions such as in (3) and (4) below can be considered serial verb constructions. Haspelmath (2016), for one, would object to this label. He proposes that one universal of serial verb constructions is that they are monoclausal, and he suggests lack of independent negation as a test for clausehood, and by extension, SVC status (Haspelmath, 2016:298-301). By this definition, the Malagasy construction in (4) below is not a serial verb construction, as its two verbs can be independently negated as in (5).

(4)   *M-itsikafona n-andalo   ny   vato ny   tavoahangy*
             PRS-float   PST-pass_by DET rock DET bottle
             'The bottle floated past the rock.'
(5)   *M-itsikafona tsy n-andalo   ny   vato ny   tavoahangy*
             PRS-float   NEG PST-pass_by DET rock DET bottle
             'The bottle floats without passing the rock.'

This is different from canonical SVC languages like Vietnamese and Thai, possibly so different that it cannot meaningfully be called an instance of the same construction. For the purpose of this paper, I will set aside the dilemma of whether Malagasy has serial verb constructions serializing over TP, or whether it lacks SVCs. What is relevant here is that the sentence in (4) expresses *a single motion event*; that is, it is parallel to its English translation and to the Spanish sentence in (1). Therefore, it is meaningful to compare this Malagasy construction to its English and Spanish counterparts and to consider how it fits into Talmy's typology.

2   Motion Events in Malagasy

The main characteristic that determines whether a language is verb-framed or satellite-framed is the encoding of the 'core schema' - in the case of motion expressions, the core schema is the path of motion (Talmy, 1991:480). Several other structural characteristics pattern with the core schema expression;[1] these are summarized in Table 1, adapted from Zlatev & Yangklang (2004:187). Explanations of each parameter follow in sections 2.1-2.3.

Table 1: Structural characteristics of verb-framed and satellite-framed languages

Parameter	V-language	S-language
Core schema (path) expression	verb	satellite
Co-event (e.g., Manner) expression	adverbial	verb
Boundary-crossing constraint	yes	no

Thus, if Malagasy is a verb-framed language, it would be expected (1) that path is expressed in verbs, not satellites; (2) that manner is expressed in adverbial phrases, not verbs; and (3) that the boundary-crossing constraint applies. In this section, each of these three aspects will be analyzed in turn.

2.1   Core Schema (Path) Expression

As noted above, the core schema of motion expressions is the path of motion (Talmy, 1991:480). In verb-framed languages, the core schema is encoded in a verb, whereas in satellite-framed languages, the core schema is encoded in a satellite. The satellite is defined as "the grammatical category of any constituent other than a nominal compliment that is in a sister relation to the verb root" (Talmy, 1991:486).

The Spanish example in (1) is repeated below as (6):
(6)   *La botella pasó   por la   piedra (flotando)*
        the bottle passed by the rock   (floating)
        'The bottle floated past the rock.'

---

[1] Zlatev & Yangklang (2004) also identify several discourse characteristics which pattern differently in verb-framed languages and satellite-framed languages. These discourse characteristics are outside the scope of this paper.

This motion event is expressed in Malagasy like this:

(7)   *(M-itsikafona)   n-andalo   ny   vato ny   tavoahangy*
        (PRS-float.AV) PST-pass_by.AV DET rock DET bottle
        'The bottle floated past the rock.'

Here, path is encoded in a verb, *n-andalo* 'pass by', and the manner expression, *m-itsikafona* 'float', is optional. This is like in Spanish, where the main verb is a path verb *pasó* 'moved by/passed'. In terms of manner and path encoding the Malagasy sentence is unlike its English translation; In English, the main verb is the manner verb 'floated', and the path is encoded in the satellite 'past'.

In Malagasy, as in Spanish, if the manner verb is made to stand as the sole (main) verb, the result is ungrammatical:

Spanish: (8) **La botella flotó por la piedra.*
Malagasy: (9) **Mitsikafona (PREP/LOC) ny vato ny tavoahangy.*[2]

The ungrammatical expressions in (8) and (9) are syntactic calques of English where the path is not expressed in a verb. These examples demonstrate that, in Malagasy as in Spanish, the path of the figure (here, the bottle) with reference to the ground (here, the rock) cannot be expressed without a path verb.

Thus, the core schema of motion expressions in Malagasy is obligatorily expressed by a verb, as expected from verb-framed languages.

2.2   Co-Event (Manner) Expression

In manner languages, the manner is expressed in a main verb, whereas in path languages, the manner is expressed in an optional adverbial phrase. In Malagasy, however, the manner is expressed as a predicate. Malagasy lacks participles and non-finite verb forms (cf. Spanish *flotando* 'floating', English gerunds), and expresses manner as intransitive Agent Voice verbs (like in (7) above). I propose that such manner expressions in Malagasy are depictive secondary predicates and more closely resemble Spanish manner participles than English verbs of manner.

In (10) it is shown that the manner verb *mitsikafona* 'float' can appear after the subject, in modifier position. In this position, the verb is translated into English as a non-finite verb form, 'floating'.

(10)   *N-andalo   ny   vato ny   tavoahangy {mena / m-itsikafona}*
        PST-pass_by.AV DET rock DET bottle   {red /   PRS-float.AV}
        'The red/floating bottle passed the rock.'

[2] This sentence is also ungrammatical because *mitsikafona* 'to float' is intransitive, and thus cannot accommodate *ny vato* 'the rock' as an object/patient argument. However, even if *ny vato* were incorporated as an oblique (with a preposition or locative element), the intended reading would not obtain. In Malagasy, as in Spanish, no sentence with the figure and ground expressed as arguments of a lone manner verb can mean 'the bottle floated past the rock'.

In (11), the manner verb appears before the subject. This sentence only produces the intended reading if there is a long pause: *Nandalo ny vato — mitsikafona ny tavoahangy.* Without this pause, the consultant reports that "it means the rock is floating." This is shown in (12). The brackets in (11), then, show the demarcation of the two predicates, and in (12) the parentheses show that the verb *mitsikafona* describes *ny vato*, not *ny tavoahangy*.

(11)   [TP1 *Nandalo   ny   vato] [TP2 mitsikafona] ny   tavoahangy*
         PST-pass_by.AV DET rock PRS-float.AV DET bottle
         'The bottle floated past the rock.'

(12)   #[TP *Nandalo   (DP ny   vato mitsikafona)] ny   tavoahangy*
          PST-pass_by.AV DET rock PRS-float.AV DET bottle
         'The bottle passed the floating rock.'

I propose that the manner expression in (11) is best described as a depictive secondary predicate. The path predicate *nandalo ny vato* 'passed the rock' encodes the core schema, and the optional manner predicate *mitsikafona* 'floating' describes the subject. *Nandalo* 'passed by' encodes the relationship between the bottle and the rock, and *ny vato* 'the rock' receives its theta role from *nandalo*. *Mitsikafona* 'floating' is optional, and describes the subject. So the path verb is the main predicate, and the manner verb is a depictive secondary predicate.

Somewhat surprisingly, the manner verb can also appear *in between* the path verb and its direct object:

(13)   *N-andalo   m-itsikafona   ny   vato ny   tavoahangy*
         PST-pass_by.AV PRS-float.AV DET rock DET bottle
         'The bottle passed the rock, floating.'

This construction, and the ungrammaticality of (9), suggest that the manner verb is subordinate to the path verb here. In (13), *mitsikafona* 'float' behaves like an adverbial adjunct, describing the path-focused action (i.e. modifying *nandalo* 'pass by').

It seems that Malagasy does not fit neatly into the dichotomy expected of manner-languages and path-languages, whereby manner languages express manner in the verb, and path languages express manner in an optional adverbial phrase. Malagasy's only strategy to encode manner is by using a verb. However, these verbal manner expressions are optional and subordinate to the main path verb. The use of depictive secondary predicates of manner in Malagasy is more similar to the use of optional manner participles in Spanish than the use of main verbs of manner in English. Here, too, Malagasy behaves like a verb-framed language.

2.3 Boundary-Crossing Constraint

Zlatev & Yangklang (2004) say that, according to the *boundary-crossing constraint*, "Manner verbs cannot be used to describe situations in which a boundary is crossed" (2004:168). They cite Slobin & Hoiting (1994) as the origin of this constraint. However, Slobin & Hoiting never

explicitly define the boundary-crossing constraint. They discuss apparent counterexamples (reproduced below) to Talmy's path-language/manner-language dichotomy, wherein path languages exhibit "path-focus clauses with a main verb of manner of motion and an adverbial path phrase" (Slobin & Hoiting, 1994:494).

Spanish:
(16a)   *El hombre entró corriendo a la casa.*
        'The man entered running to the house.'
(16b)   *El hombre corrió hasta la casa.*
        'The man ran up.to the house.'
French:
(17a)   *L'homme est entré dans la maison en courant.*
        'The man entered the house in running.'
(17b)   *L'homme a couru jusqu'à la maison.*
        'The man ran up.to the house.'
Turkish:
(18a)   *Adam koşarak eve girdi.*
        'Man running house-DAT entered.'
(18b)   *Adam eve kadar koştu.*
        'Man house-DAT up.to ran.'

In each of these examples, the first sentence means 'The man ran into the house,' while the second means 'The man ran up to the house.' In English, both sentences have 'run' as the main verb; as a satellite-framed language, English doesn't follow the boundary-crossing constraint.

In the data in (16)-(18) above, it seems that main verbs of manner can only be used with locative path adverbials, whereas motion event expressions involving a crossing of a boundary require path verbs. Slobin & Hoiting liken the two types of path expressions to Aske's "mere locative path phrases" and "telic path phrases", respectively (Aske, 1989:6). With this in mind, I'm using a different definition of *boundary-crossing constraint* than Zlatev & Yangklang:

(19)   *Boundary-crossing constraint: boundary-crossing path phrases can only be licensed by path verbs.*[3]

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[3] This definition also differs from Slobin (2004), who says "It appears that V-languages only license the use of a manner verb as a main verb in a path expression if no boundary-crossing is predicated" (7). His formulation makes it difficult to assess languages with SVCs, as it is unclear how the notion of "main verb" applies to them. It seems that what matters in assessing whether a language follows the boundary-crossing constraint, and what differentiates V-languages and S-languages, is whether an expression with a lone manner verb can produce a telic/boundary-crossing reading, or whether this requires a path verb.

Malagasy follows this boundary-crossing constraint, as can be seen in the data below.

(20a)   *N-ihazakazaka n-iditra   ao   an-tsekoly   aho*
      PST-run.AV PST-enter.AV here LOC-school 1s.NOM
      'I ran into the school.'

(20b)   *N-iditra   ao   an-tsekoly   aho*
      PST-enter.AV here LOC-school 1s.NOM
      'I entered the school.'

(20c)   *N-ihazakazaka ao   an-tsekoly   aho*
      PST-run.AV here LOC-school 1s.NOM
      'I ran in the school.'
      *'I ran into the school.'

(20d)   *N-ihazakazaka ho any an-tsekoly   aho*
      PST-run.AV IRR there LOC-school 1s.NOM
      'I ran (up) to the school.'

In the data in (20a-d), only (a) and (b) express boundary-crossing events, and these both have the path verb *niditra* 'enter'. A comparison of (a) and (b) shows that manner can optionally be expressed, using the verb *nihazakazaka* 'run'. If this manner verb in (a) is not included, the resulting sentence (b) still results in a telic reading. However, if the *path* verb is removed from (a), the result, (c), does not allow a telic reading. This sentence (c) means only 'I ran in the school', like on an indoor track, for example. It cannot mean 'I ran into the school'; as there is no path verb, this sentence cannot imply a boundary-crossing.

Compare the Malagasy data in (20) with the equivalent French expressions in (21):

(21a)   *Je suis entré dans l'école en courant*
      'I ran into the school.'

(21b)   *Je suis entré dans l'école*
      'I entered the school.'

(21c)   *J'ai couru dans l'école*
      'I ran in the school.'
      *'I ran into the school.'

(21d)   *J'ai couru jusqu'à l'école*
      'I ran to the school.'

Here we see nearly perfect parallels with the Malagasy constructions in (20). The manner expression *en courant* 'running' in (21a) can be left out without changing the nature of the path expression. However, replacing the path verb in (21b) with a manner verb and using the same adverbial path phrase results in a stative/atelic reading, shown in (21c). Finally, encoding the telic and atelic (boundary crossing/non-boundary crossing) meanings of '(in)to the school' require different adverbial phrases in both languages.

In (20a-c) the adverbial phrase *ao an-tsekoly* 'here LOC-school' alternatively means 'into the school' or 'in the school' depending on the verbal context. In other words, the same phrase can encode a "mere locative path phrase" or a "telic path phrase" depending on the verb, and the

"telic path phrase" meaning can only be licensed by a path verb. This differs from English, a satellite-framed language, where the telicity or boundary-crossing quality of the motion is encoded in a satellite, and the same verb is used in both expressions. In the examples below, the element that gives rise to the boundary-crossing interpretation is shown in bold:

French: *Je suis **entré** dans l'école.*
             J' ai couru dans l'école.
Malagasy: ***Niditra** ao an-tsekoly aho.*
             Nihazakazaka ao an-tsekoly aho.
English: *I ran **into** the school.*
             I ran inside the school.[4]

Regardless of the precise definition of the boundary-crossing constraint, Malagasy patterns with verb-framed languages (like those shown in (16)-(18) above) in its expression of telic/boundary-crossing motion events.

3 Conclusion

The conclusions from section 2 are summarized in the table below:

Table 2: Structural characteristics of verb-framed languages, satellite-framed languages, and Malagasy

Parameter	V-language	S-language	**Malagasy**
Core schema (path) expression	verb	satellite	**verb**
Co-event (e.g., Manner) expression	adverbial	verb	**secondary predicate**
Boundary-crossing constraint	yes	no	**yes**

Across all three of these dimensions, Malagasy patterns as a verb-framed language. If Malagasy is to be considered a Serial Verb Construction language, then this shows that not all SVC languages are alike in their relation to Talmy's typology. The Malagasy data do not provide evidence for Zlatev & Yangklang's (2004) third category, at least as far as these three structural characteristics go. Perhaps the discourse characteristics of Malagasy motion events differ from V-

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[4] It is worthy of note that for "I ran **inside the school**" in English, the adverbial (satellite) phrase (in bold) can be interpreted as *either* a locative path phrase or a telic path phrase. However, a main verb of manner (here, "run") is not incompatible with the telic reading, thus violating the boundary-crossing constraint, as expected for a satellite-framed language.

language patterns as Thai and other SVC languages apparently do (cf. Zlatev & Yangklang, 2004:187), and this is a potential topic for future research.

The motion event expressions in Malagasy and in SVC languages show that terms like "main verb" must be used carefully and precisely when formulating predictions of motion event typologies. Statements like "languages fall into two typological categories on the basis of where they characteristically express the schematic core of the framing event - in **the verb** or in a satellite to **the verb**" (Talmy, 1991:480, emphasis added) assume that "the verb" can be unambiguously identified in a motion event expression - for Malagasy, it is not so straightforward. I have demonstrated that if our definition of *boundary-crossing constraint* assumes that a motion event expression will only have one verb, it causes problems when applied to languages that do not follow this assumption. Nevertheless, I have shown that it is possible to compare languages with radically different syntactic strategies for encoding motion events, even when a surprising diversity in constructions demands a reconsideration of definitions or frameworks.

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The Iambic/Trochaic Law in Mandarin Tone Sandhi

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Abstract

According to the Iambic/Trochaic Law (i.e. ITL), there is a universal perceptual bias that a sequence of (non-)speech signals varied in duration leads to iambic rhythmic grouping, whereas signals with contrasting intensities result in trochaic grouping. While ITL has been tested cross-linguistically in previous studies, it remains mostly unexplored how ITL might be applied in tone languages such as Mandarin Chinese, where native speakers may use their phonological knowledge of tone sandhi in addition to duration and intensity cues for lexical grouping. This study examines how Tone 3 sandhi cues interact with duration cues, and to what extent both cues might influence Mandarin listeners' perception of grouping and prominence, as well as naturalness judgement. In the experiment, participants hear streams of repetitions of existing bisyllabic Mandarin words with manipulated duration and with either the underlying Tone 3 or the sandhi Tone 2 on each syllable. The results from all the three tasks suggest that the tone sandhi cues are stronger than the duration cues in its effect on grouping and prominence judgement. Duration does have some effects on prominence, especially when duration cues agree with sandhi cues. In terms of naturalness judgement, sequences with sandhi cues are judged to be significantly more natural than sequences without sandhi cues. However, our current results are insufficient for any conclusion regarding duration's effects on the naturalness rating.

1 Introduction

This study investigates how phonetic and phonological cues interact with each other and what roles they play in listeners' perceptions of grouping and prominence. According to the Iambic/Trochaic Law (i.e. ITL), there is a universal perceptual bias that a sequence of speech or non-speech signals varied in duration leads to iambic rhythmic grouping, whereas the signals with contrasting intensities result in trochaic grouping (Hay & Diel, 2007). Even though previous research on ITL has tested the perceptual grouping of native speakers of English and French (Hay & Diehl, 2007), French and German (Bhatara et al., 2013), Spanish and English (Crowhurst & Olivares, 2016), English and Japanese (Iversen et al., 2008), the application of ITL in tone languages, however, remains mostly unknown. In tone languages spoken in Asia such as Mandarin Chinese, tones are associated to each syllable in a word and they are used to make lexical contrasts, such as in monosyllabic words ma (T1) 'mom', ma (T2) 'hemp', ma (T3) 'horse', ma (T4) 'scold'. The type of a tone may alternate depending on the types of adjacent tones or the prosodic and/or morphosyntactic position in which the tone occurs (Chen, 2000). This phonological process of alternation of tones in different contexts is called tone sandhi. In tone sandhi processes, citation syllable refers to the syllable on which the tone does not change, and sandhi syllable is the one on which the tone type alters. There are two types of tone sandhi concerning the relative positions of the citation syllable and the sandhi syllable in a disyllabic unit. Right dominant tone sandhi refers to tonal changes observed on the left syllable whereas left dominant tone sandhi on the right. Yiu (2019) points out that the distinction between left and right tonal prominence displayed in bidirectional tone sandhi resembles the metrical distinction between iambic and trochaic rhythm. The application of ITL in Southern Min is investigated in Yiu (2019), and it is found that the metrical prominence predicted by the Iambic/Trochaic Law aligns with tonal prominence. Specifically, the production test shows that duration contrast occurs in the right dominant tone sandhi type, with longer duration on the right citation syllable, whereas intensity asymmetry occurs in the left dominant tone sandhi type, with higher intensity on the left citation syllable. Yiu concluded that the tone sandhi in Southern Min matches the pattern of the iambic trochaic law, such that the left dominant tone sandhi type matches with the trochaic words, and the right dominant tone sandhi type matches with the iambic words. Citation syllables of different rhythmic types are more prominent in their corresponding phonetic cues, while sandhi syllables are less prominent.

Although some production tests have been conducted by Yiu (2019) on Southern Min, it is still unexplored how ITL might be applied to other tone languages like Mandarin in a perception study. Based on the findings in Yiu (2019), it is expected that the tone sandhi in Mandarin Chinese, which only has the right dominant sandhi type, will pattern with the iambic rhythm and has duration asymmetry. When tone sandhi is applied in certain existing words, Mandarin speakers may perceive words with an iambic rhythm as more natural than those with a trochaic rhythm, if Yiu (2019)'s hypothesis is correct. Additionally, in the case where phonetic cues and tone sandhi cues are both present, it is uncertain whether the acoustic variations will influence the perceptual effect that tone sandhi has on word segmentation. More specifically, since Mandarin tone sandhi is claimed to be right dominant (i.e. pattern with iambs) and has a strong phonological cue to grouping, the acoustic cue of duration contrasts may also affect Mandarin listeners' perception.

Moreover, the naturalness and the perceptual prominence of the existing words may be affected when the duration cue is manipulated. We hypothesize that tone sandhi cue has a stronger effect on grouping than the duration cue, yet when only the duration cue is present, the listeners may still perceive the rhythm as iambic. We also hypothesize that both sandhi and duration cues can influence perceived naturalness and prominence judgement. We conducted a perception study to examine to what extent sandhi cues and duration cues might influence Mandarin speakers' perception of grouping and prominence, as well as naturalness judgement.

2 Methodology

2.1 Participants

Sixteen native speakers of Mandarin took part in the experiment. They were all students at McGill University and lived in Montreal when the experiments took place. Most of them were fluent L2 learners of English, and some had knowledge of French. In addition, we recorded each participant's years of musical experience through a music questionnaire as musical experience evidently aids in perceiving lexical stress (Kolinsky et al., 2009; Bhata, 2013).

2.2 Stimuli

The third tone sandhi in Mandarin was tested in this experiment. The third tone sandhi refers to the change of Tone 3 (213) to Tone 2 (35) when preceding another Tone 3, for example, the word ke3.kou3 'delicious' becomes ke.2kou3 in speech. We selected existing bisyllabic Mandarin words with underlying Tone 3 on each syllable. Additionally, when the order of the two syllables is reversed, they still form an existing word albeit with a different meaning. We selected a total of four reversible bisyllabic words as follows:

1. ke3.kou3 - kou3.ke3 ("delicious" – "thirsty")
2. nü 3.zi3 - zi3.nü 3 ("woman" – "offspring")
3. dian3.jiu3 - jiu3.dian3 ("iodin" – "9 o'clock")
4. cai3.shui3 - shui3.cai3 ("to tread water" – "watercolour")

We recorded those item pairs in three different tonal combinations: T3T3 (underlying form), as well as T2T3 and T3T2 (two surface forms in reversed orders). The intensity of those recordings was scaled to the same level (i.e. 78 dB) and the duration of each syllable was adjusted to the same length (i.e. 425ms). The duration contrast in the two syllables was manipulated in two steps (step one: length of one syllable -0.075s; step two: length of the other syllable +0.075s) for each tonal combination, resulting in four duration conditions, namely, "short-short", "short-long", "long-long", "long-short". We generated sequences of those item pairs in repetition with a Praat script, for instance, the sequences generated from ke3kou3-kou3ke3 item pair are shown as follow:

"ke3kou3ke3kou3ke3kou3..." in short-short, short-long, long-short, long-long
"ke2kou3ke2kou3ke2kou3..." in short-short, short-long, long-short, long-long
"kou2ke3kou2ke3kou2ke3..." in short-short, short-long, long-short, long-long

Each recording lasted twelve seconds, and a shading noise of around 3.3s was added at the beginning for each stimulus. To counterbalance the order effect, we generated two sets of sequences of both syll1 syll2 and syll2 syll1 for each item, and they were coded as "Condition1" and "Condition2". To sum up, 4 item pairs, each with 12 different combinations of tones and duration manipulations plus 2 different orders, resulted in a total of 96 sequences of stimuli for the entire experiment.

2.3 Procedure

Participants were seated in a quiet room, and the stimuli were presented at a comfortable listening level using MatLab software on a desktop in Prosody Lab at McGill. Participants were asked to listen carefully to the recordings of Mandarin word sequences first, and then they were tasked to answer the following three questions for each trial in order: (1) select the word they heard in the recording, (2) how natural this word sounded in Mandarin on a scale from 1 to 8 (1=very unnatural and 8= very natural), and (3) which syllable was more prominent in the word they heard. The instruction and tasks were all presented in Mandarin Chinese. The recording cannot be replayed at the question page. In the instruction page, we listed out the three tasks that they will be asked to do during the experiment so that the participants will know what to pay attention to in the audio recordings.

We used LatinSquare design to ensure each participant will see one order condition from each item set, and an equal number of trials from each condition across items, so each participant needed to complete 48 trials in the experiment. This was done by creating two playlists with a selection of trials from the two conditions for the two orders. Each playlist was randomized for each participant, and the same stimulus was not repeated more than once.

3 Results

The data were analyzed and visualized in R using ggplot2 packages. In the plots below, for each condition on the horizontal axis, the first manipulation is always on Syllable 1, and the second manipulation is on Syllable 2. For example, tonal condition 23 indicates Tone2 on Syllable 1 and Tone3 on Syllable 2; duration condition short-long means Syllable 1 is short and Syllable 2 is long.

### 3.1 What word did you hear?

Predictions:
If the sequence of stimuli consists of the T2T3 or T3T2 tonal combination (i.e. combination that resembles tone sandhi process), then we predict that regardless of the duration manipulations, the participants will most likely hear the word that corresponds to the surface

form after tone sandhi. If the sequence of stimuli consists of the T3T3 tone combination (i.e. the underlying form), then there is a 50% chance that the participants will hear either word when there is no duration contrast; they will group the sequence iambically when the duration contrast is present.

Observations:

For the sequence of stimuli consisting of T2T3 tone combination, the overall plot in Figure 3.1 shows a high percentage of choosing the surface forms after tone sandhi regardless of duration manipulations as expected. When the sequence of stimuli consists of the T3T3 tone combination, however, the overall plot shows that duration contrast does not have a significant effect on grouping when there is no sandhi process. In addition, in some cases, the duration contrast has a slightly trochaic effect. From the plots of caishui and kekou in Figure 3.1, Word 1 with the short-long manipulation has less percentage of selection than that of Word 2.
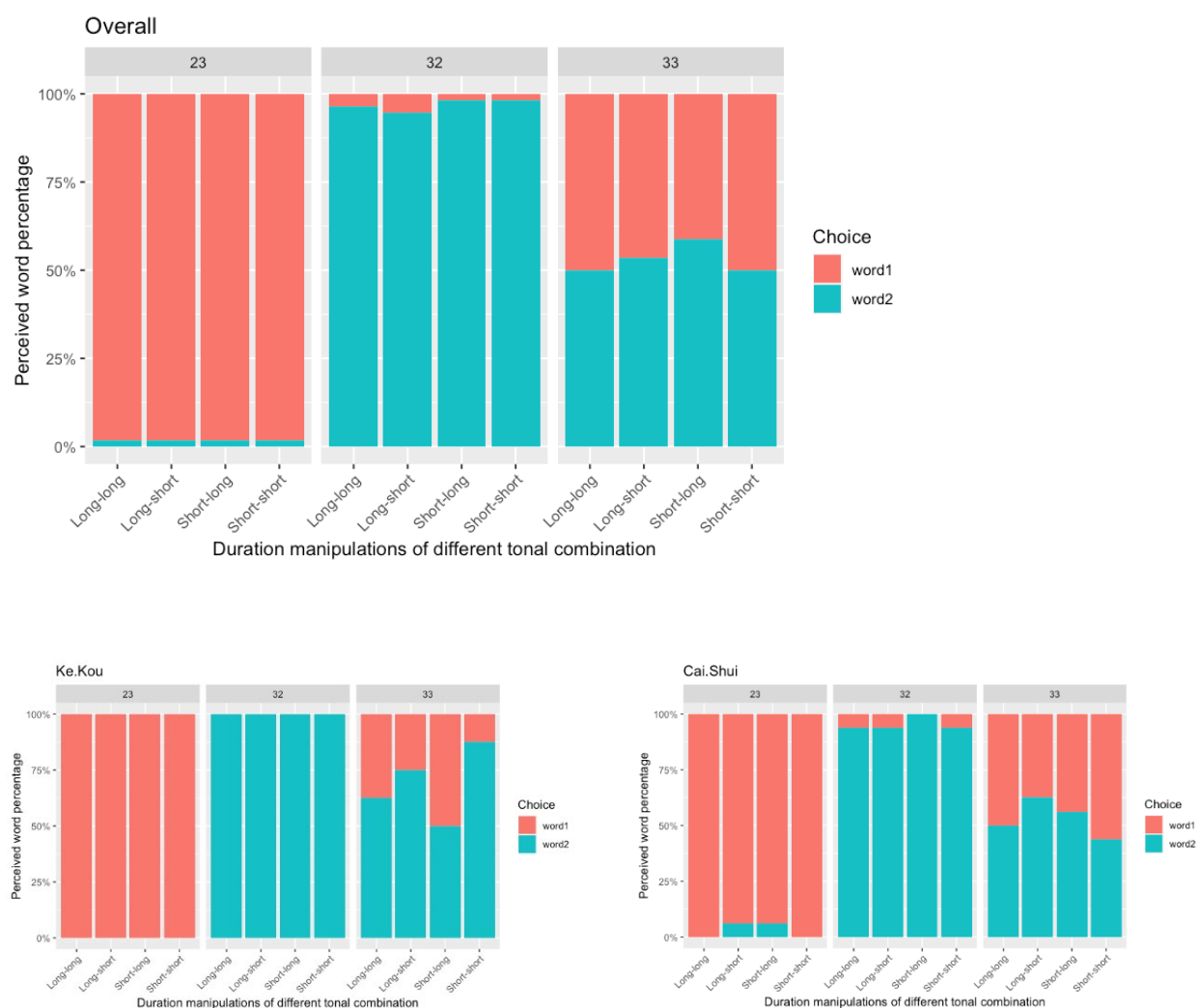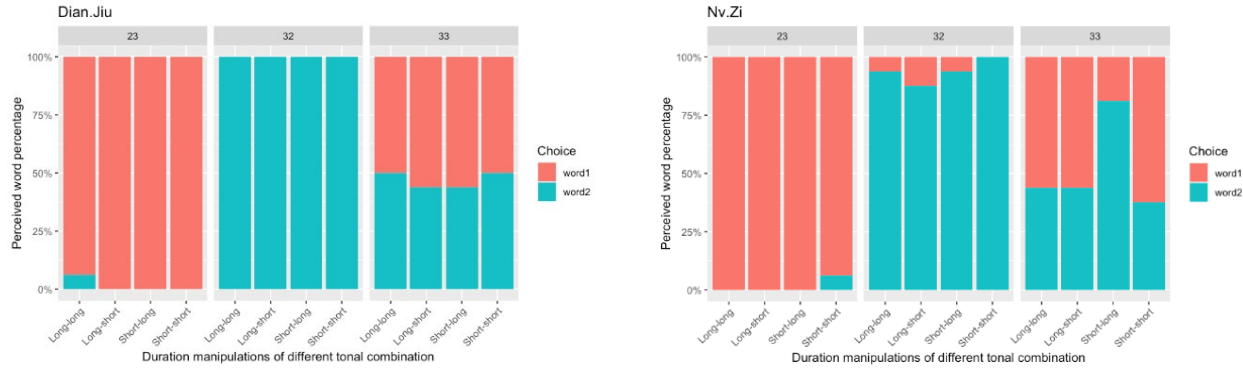
Figure 3.1 Plots for grouping question results. The overall results as well as results for each item pair are presented. The x-axis shows duration manipulations of different tonal combinations, and the y-axis exhibits the percentage of perceived words by Mandarin speakers.
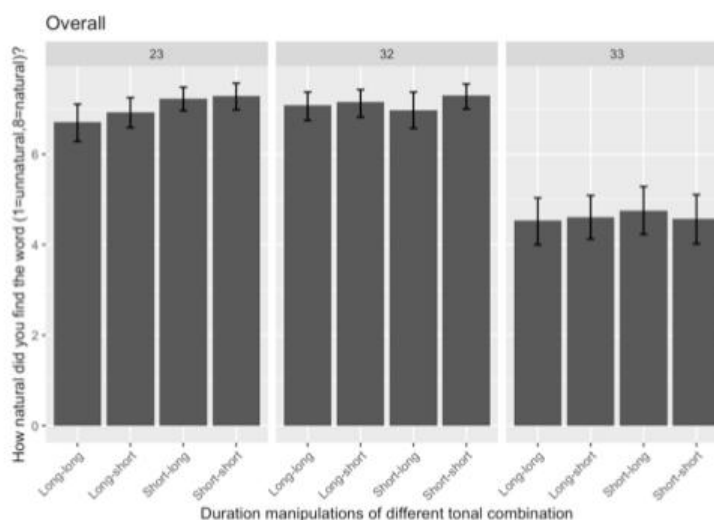
3.2 Naturalness

<u>Predictions:</u>

It is expected that the stimulus with sandhi rules applied and surfacing as T2T3 or T3T2 will be judges as more natural than those with underlying T3T3 tones by Mandarin speakers. Following Yiu (2019)'s finding, Mandarin third tone sandhi should pattern with iambic rhythm. Among conditions of 23 or 32 tonal combinations, participants should perceive stimulus that have longer duration on the syllable with T3 as more natural, and stimulus that have longer duration on the syllable with T2 as less natural, according to the rhythmic nature of iambs.

<u>Observations:</u>

Our results exhibit that words consisting of the T2T3 or T3T2 tone combination are more natural compared to words with T3T3 underlying forms as shown in Figure 3.2. When tone sandhi cues are present, there is a slight trend that short-long condition of T2T3 combination has higher-rated naturalness than long-short condition, and long-short condition of T3T2 combination has higher-rated naturalness than short-long condition. When tone sandhi cues are absent (i.e. T3T3 group), sequences with short-long contrast are perceived as more natural than those with long-short contrast by a small margin. Nevertheless, the naturalness judgement is mostly based on the third-tone sandhi cues instead of the duration cues.

Figure 3.2 The plot for overall naturalness question responses. The plots for responses of individual item pairs are shown in the appendix. The x-axis shows duration manipulations of different tonal combinations, and the y-axis exhibits the mean values of rated naturalness.

3.3 Which syllable is more prominent?

<u>Predictions:</u>

Duration variations may serve as a cue to prominence. Syllables with longer duration might be judged as more prominent by the listeners. In addition, syllables with T3 (i.e. the citation syllable) might be judged as more prominent than syllables with T2 (i.e. the sandhi syllable).

<u>Observations:</u>

1) Duration effects on prominence

In terms of duration's effects on prominence, we observe that longer syllables are judged to be slightly more prominent than shorter syllables in Figure 3.3 for overall results. In the T3T3 group, when tone sandhi cues are not available, Syllable 1 which has longer duration in long-short condition is more prominent than Syllable 2 (Syllable 1 70%: Syllable 2 30%). However, when the duration of Syllable 2 is longer than Syllable 1 (short-long condition) in the T3T3 group, there is almost no difference in prominence between two syllables (Syllable 1 50%: Syllable 2 50%). Therefore, the duration effect on prominence judgement is a little more random than what we expect.
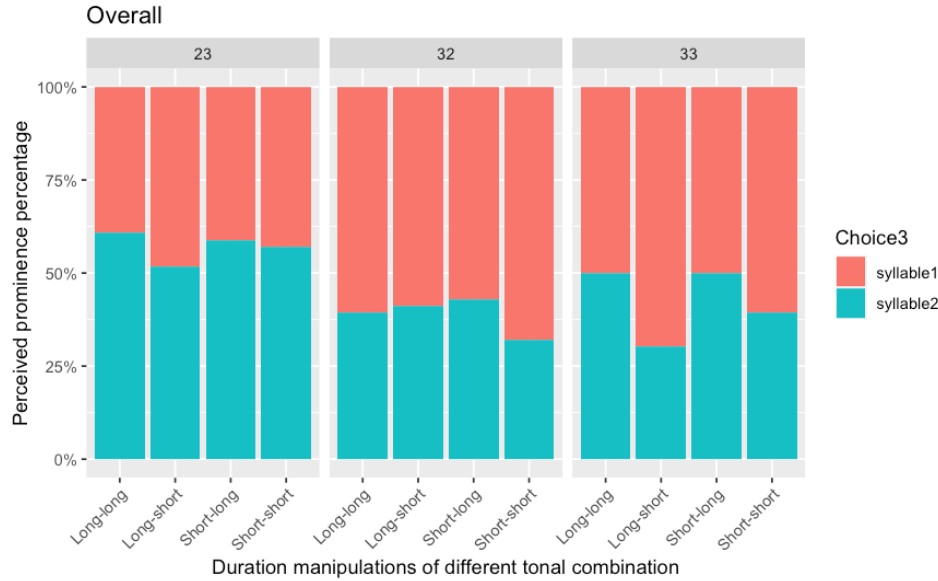
Figure 3.3 The plot for overall prominence question responses. The plots for responses of individual item pairs are shown in the appendix. The x-axis shows duration manipulations of different tonal combinations, and the y-axis exhibits the overall percentage of perceived prominence.

2) Tone sandhi effects on prominence

In terms of the tone sandhi effects on prominence, we observe that syllables with T3, the underlying tone, are more prominent than syllables with T2, the sandhi tone, as shown in Figure 3.3. When Syllable 2 has underlying T3 and Syllable 1 has sandhi T2 (i.e. T2T3 group), the percentages of perceived prominence of Syllable 2 are in general more than 50%. In other words, Syllable 2 with T3 has an overall higher percentage of prominence than Syllable 1 with T2. Similarly, When Syllable 1 has underlying T3 and Syllable 2 has sandhi T2 (i.e. T3T2 group), the prominence percentages of Syllable 1 are higher than those of Syllable 2.

3) Cooperating conditions

We also notice that when duration cues cooperate with tone sandhi cues, the prominence difference is more significant. Cooperation refers to the conditions wherein both tone sandhi and duration work towards the same direction on the same syllable, either together increasing or decreasing the prominence of the syllable, as discussed in Crowhurst & Olivares (2016). For example, according to the results above, both a longer duration and underlying T3 on the same syllable may be perceived as more prominent, and both a shorter duration and sandhi T2 on the same syllable may lead to a relatively lower percentage of prominence.

For the T2T3 group in the overall results, when Syllable 2 with the underlying T3 has a longer duration than Syllable 1 (i.e. short-long condition), the perceived prominence percentage of Syllable 2 is higher than Syllable 1 (i.e. 60%: 40%). This prominence difference is more significant than when Syllable 2 has T3 yet with a shorter duration, which shows a competing condition as illustrated in the next paragraph. Similarly, in the T3T2 group, when Syllable 1 has underlying

T3 and a longer duration than Syllable 2 (i.e. long-short condition), the perceived prominence percentage of Syllable 1 is higher than Syllable 2 (62%: 38%).

   4)   Competing conditions

Competition refers to the conditions wherein tone sandhi and duration work towards opposite directions on the same syllable (Crowhurst & Olivares 2016). For example, one cue serves to increase the prominence of the syllable while the other decreases the prominence. When duration cues compete with tone sandhi cues, tone sandhi wins to a small extent.

For the T2T3 group in the overall result, when Syllable 1 with sandhi T2 has a longer duration than Syllable 2 (i.e. long-short condition), the perceived prominence percentage of Syllable 1 is almost the same as Syllable 2 (50%: 50%). For the T3T2 group, when Syllable 1 with underlying T3 has a shorter duration than Syllable 2 (i.e. short-long condition), the perceived prominence Syllable 1 is higher than Syllable 2 (60%: 40%). Generally speaking, tone sandhi wins duration by a small margin when they compete with each other as prominence cues.

4   Discussion and Conclusion

The results from all the three tasks suggest that the tone sandhi cues are stronger than the duration cues to grouping and prominence. Sequences with the tone sandhi cues are judged to be significantly more natural than sequences without sandhi cues. We notice that when only duration cues are present, there is an overall trend that the naturalness ratings of sequences with short-long contrast are higher than sequences with long-short contrast. However, our current results are insufficient for any conclusion regarding duration's effects on the naturalness rating. Duration does have some effects on prominence, especially when duration cues cooperate with sandhi cues.

Potential methodological problems are discussed as follows, for which some improvement could be done in a further study. First of all, based on our observation, tone sandhi wins as the more prominent cue by a small margin when it competes with duration. The duration cue could potentially be perceived as more robust if the contrast is bigger. In a follow-up study, we could experiment with duration contrasts of different magnitudes and see how the effects differ.

In addition, the design of the question might have given the participants a "forced choice". In the first question, they were asked to select between two lexicons based on the stimuli that they heard. The question itself is making an assumption that they must group the sequence as bisyllabic words. However, for T3T3 sequences, it is possible that their grammar actually prefers having no grouping at all; instead, they might perceive individual T3 monosyllabic words ((T3)(T3)(T3)....). It is probably better to have three options, two being the lexicons and one being "no grouping".

Moreover, the perception test may not be able to capture the listeners' actual "competence". Compared to sandhi cues, the duration effect can be too subtle to be perceived by Mandarin speakers. It is likely that in a production experiment, speakers' spontaneous speech can better show their use of duration cues as stated in Yiu (2019). Additionally, differences in the frequency of usage of items may have also affected our results. An item that is not commonly used is likely to be less frequently grouped as a word when no sandhi cue is given. For example, cai3shui3 (to tread water) has a lower usage frequency in daily life scenarios than shui3cai3 (watercolour). The

results might be more accurate if we use word pairs with similar usage frequency. Besides, we currently use data from only 16 Mandarin speakers. More generalizable results could be obtained if we increase the number of participants and participants' age-range.

Finally, according to ITL, both intensity and duration variations affect the grouping and prominence judgement of a sequence of syllables. However, in this experiment, only duration is manipulated. In a follow-up study, intensity can be manipulated to see its interaction with tone sandhi.

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Appendix

Individual Plots for Question 2 Naturalness:
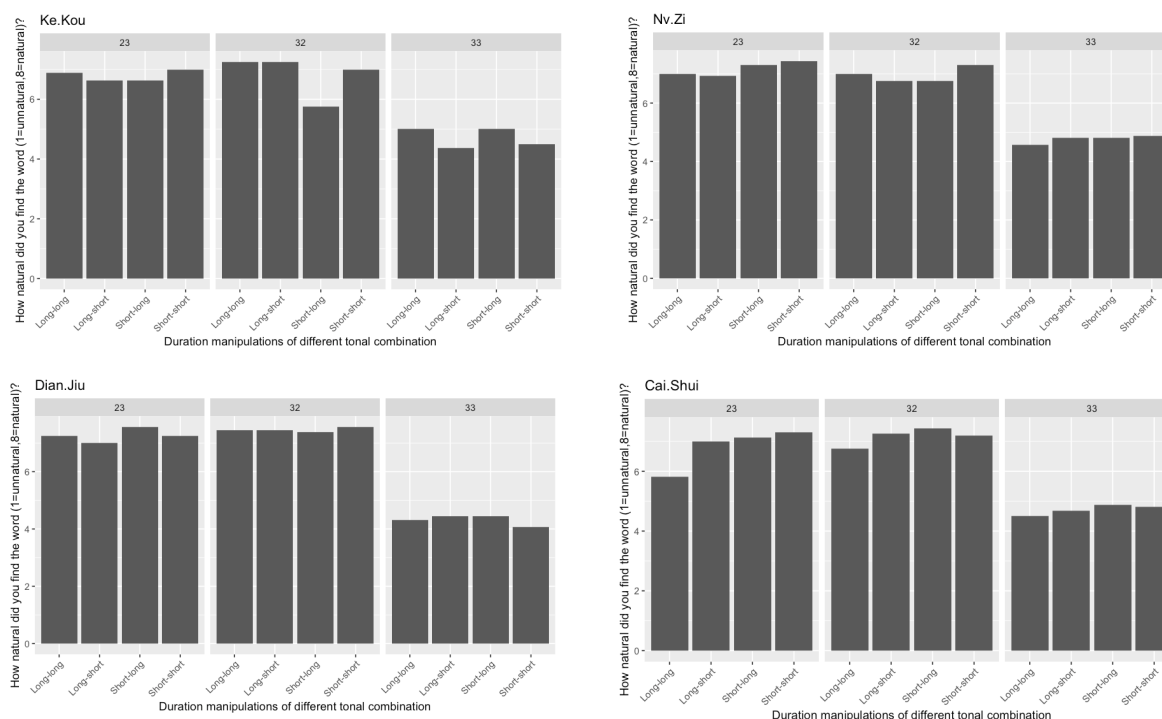
Individual Plots for Question 3 Prominences:
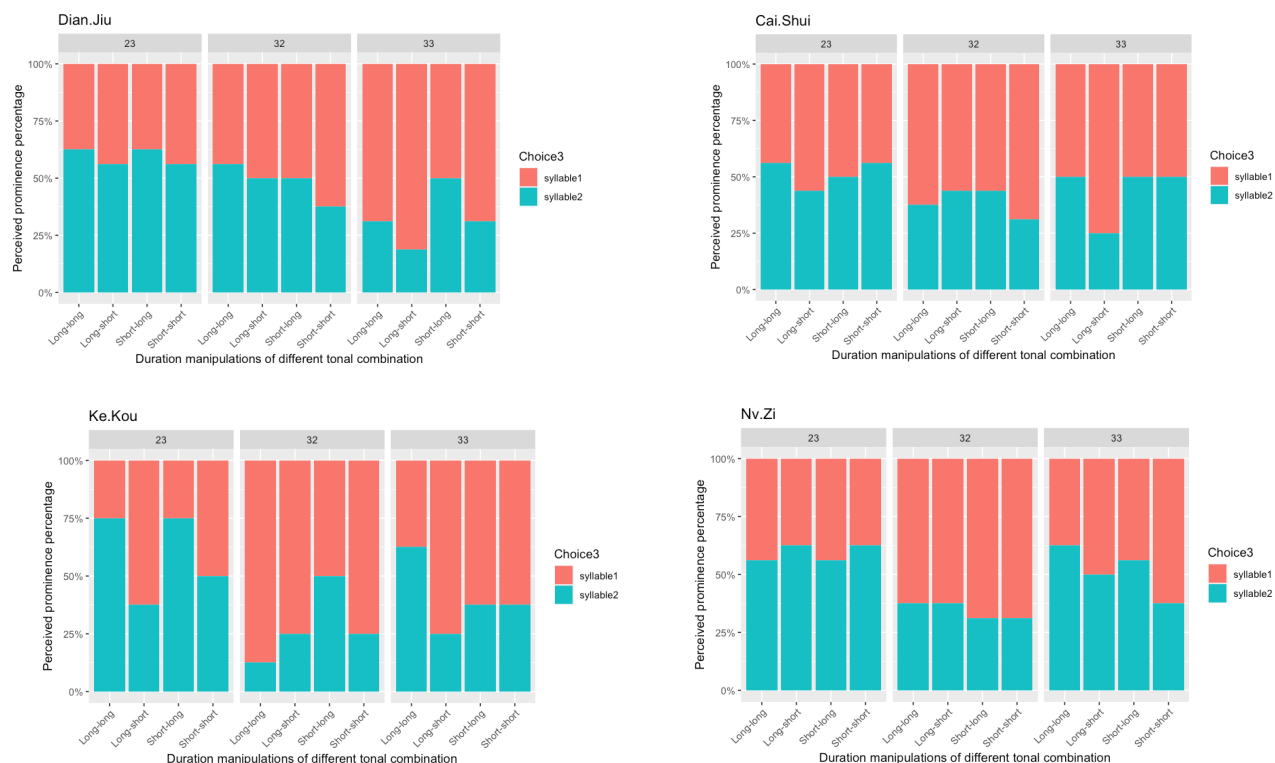
Language Planning: The Importance of Statehood and Public Engagement in the Revivals of Irish, Catalan, and Sámi

Avery Franken

Abstract

In contact situations, when a minority language is falling into disuse in favour of the dominant language, parties seeking to reverse this shift may implement language planning strategies. Language planning consists of policies and campaigns intended to sustain or revive a language by targeting multiple aspects of its structure and usage. This paper investigates how the efficacy of such action is impacted by two contextual factors: the political autonomy of the interested parties and the engagement of its general population with revitalization measures. It analyzes historical accounts of three minority language situations — Irish in the Republic of Ireland, Catalan in Catalonia, Spain and Sámi in Norway — and compares their sociopolitical features and policy outcomes. From this analysis, the paper concludes that each factor has a unique impact on the results of language planning: the political autonomy of the linguistic group delimits what level of revitalization is possible, while the commitment of the general public determines to what extent, within this boundary, revitalization is ultimately achieved.

1 Introduction

The efficacy of language planning is one of the most relevant areas of study in the field of sociolinguistics in today's age of globalization and multiculturalism. Language planning is the implementation of action plans and policies that seek to sustain or revive a language by targeting multiple aspects of its structure and usage. It is often undertaken by the government of the country in which the language originated or is politically relevant; however, various other groups, including special interest groups, councils, academics, and linguists, carry out language planning as well (Ager, 2001).

When any element of the language itself is being changed or influenced, such as its pronunciations, orthography or lexicon, the process is called corpus planning (Baldaulf, 1989). One of the most common goals of corpus planning is the standardization of a given language: differences between varieties are reduced by declaring certain variants to be that of the "official" or "standard" language, and this standard is then implemented in a broad range of contexts (Deument, 2002). Alternatively, the functions of a language can be targeted for expansion; referred to as status planning, this is when new policies seek to regulate the domains in which a language is used, and therefore increase the prestige with which it is associated (Ager, 2001).

There are potent political and social advantages for linguistic groups that can maintain a thriving, widely-used language – strong shared cultural identity, greater influence in academic and diplomatic domains, more rights and prestige nationally and internationally, et cetera. Hence, language planning and policy is employed to some extent in virtually all regions of the world. Revival of traditional languages in decolonized areas, maintenance of minority languages in multi-ethnic and multicultural contexts, and updating languages to accommodate developing fields of study such as science and technology are some of the most common contexts in which language planning is used today (Wardaugh, 2010).

The efficacy of language planning is most easily addressed by evaluating past attempts and determining which factors could have predicted their success or failure. It is the question of efficacy I seek to explore with the following comparative look into the published research on three instances of language planning: Irish in the Republic of Ireland, Catalan in Catalonia, Spain, and Sámi in Norway. Between these minority language situations, I compare their relative levels of political autonomy and public engagement in order to assess how consequential each of these factors are for language policy outcomes. From this analysis, I conclude that each factor has a unique impact on the results of language planning: the political autonomy of the linguistic group delimits what level of revitalization is possible, while the commitment of the general public determines to what extent, within this boundary, revitalization is ultimately achieved.

2 Irish in the Republic of Ireland

In *The Language Planning Situation in Ireland,* Muiris Ó Laoire gives a thorough review of the history of the Irish language from its fall from dominance in the 18th century to the time of publication in 2005. He illustrates that the fate of Irish has ultimately been determined by the general public's reluctance to engage with policies implemented by the government of Ireland to reincorporate Irish into daily life.

Ó Laoire starts by explaining how Irish initially lost its place as the main language of the Irish people (2005). Starting with the English conquest of Ireland in 1603, and the consequent anglicization of Irish institutions, Irish was already very much reduced by the 19th century. Then, the economic collapse and famine in 1845 and the concomitant mass emigration expedited the process by causing drastic decreases in the Irish speaking population. By the end of the 19th century, the number of Irish speakers was around as low as it is in present day – between 3 and 5% of the population (Ó Laoire, 2005: 255). However, the beginnings of Irish nationalism were forming concurrently, and with that came The Gaelic League whose purpose was to revitalize their recently diminished language. They promoted the idea of a language revival to the public, provided Irish language classes, and helped make Irish the "national language" of the new Republic of Ireland according to the constitution in 1922 (256).

However, it appears that the achievement of independence in 1922 resulted in a loss of the language revival movement's *raison d'être.* From the 1920s to the 1960s, the government put sustained effort into bringing Irish back to dominant usage among its people, only to be met with an underwhelming response. Ó Laoire cites a number of reasons for the lack of public support; mainly, the lofty goal of Irish monolingualism was proposed largely by middle-class nationalists and was no longer relatable for the working-class majority in an already independent Irish state (261). Also, much of the language shift reversal policies were to be enacted through the education system, but they were ill-conceived. For instance, the teachers that were expected to teach children Irish were not proficient in Irish themselves (262). In the 1960s, after decades of disappointing results, the standards for success were lowered from achieving monolingualism to achieving a strong English-Irish bilingualism. They started promoting everyday use of Irish in the home with a widespread selection of Irish media (268). Though this was met with relatively more engagement from the general public, as seen in the strong support of the Gaelic Television Station in 1996 (Ó Laoire, 2005: 289), it remains evident that this realignment did not ultimately succeed either.

The article concludes with a review of the more recent advancements in the language revival movement, including the Official Languages Act of 2003 which outlines the further expansion of Irish in public services and advertising, Irish's status as an official language of the European Union, and the effects of immigration and increased multilingualism (Ó Laoire, 2005: 304). According to Ó Laoire, it is the last of these three that has the greatest capacity to change the course of Irish language planning, as an increase in the languages present in Ireland could possibly reignite an identity-driven motivation to protect the land's traditional language (308).

The second piece of literature on the Irish language that informed my analysis was *'You Might All Be Speaking Swedish Today': language change in 19th-century Finland and Ireland* by Michael C. Coleman (2010). In this essay, Coleman details the opposite progressions of Finnish and Irish from 1800 (a time when Irish had four times as many speakers as Finnish) onwards, comparing each language step by step until they each achieved independence in the early 1900s (2010). He determines consequential events in the nations' respective histories, such as Finland's transfer from Swedish to Russian control in 1809 and Ireland's destructive famine and emigration in 1845. In particular, he stresses Ireland's close proximity to English, and Finland's lack of such an obvious alternative. Coleman concludes that both chance and the priorities of the population in question play an influential role in language vitality (2010).

Though I accept Coleman's assertion that independent contingencies of history can indeed impact the fate of a language, I question if this is a worthwhile remark – it is arguably the case that every aspect of human history is highly contingent. However, I strongly agree with his second argument for the decisive power of the public's priorities. Coleman stresses that while the Irish people could not control the British imperialism that was taking away their language at an institutional level, they did make pragmatic decisions regarding their own language use that countered endeavours to revive Irish. For one, many of their own nationalist movement groups in the early 20th century operated in English (49). Further examples included Irish speaking parents teaching their children English instead of Irish so that they would have more opportunities in Dublin and internationally (48), and letting the Catholic Church adopt English in its seminaries and services to strengthen it against the threat of encroaching Protestantism (51).

The prioritization of factors other than their own language (independence, opportunities for their children, religion, et cetera) can be seen in Ó Laoire's account as well; throughout the text, Ó Laoire mentions that when polled, the Irish indicated a general interest in reviving their language (2005), yet their resistance to the various iterations of language policy from the government indicates a divide between their language-related ideals and what they were actually willing to put into practice. Their very close proximity to the world's most dominant language, and the ease and opportunities this affords them in a world quickly becoming more internationally-oriented, ensures that this conflict of interest will persist.

3   Catalan in Catalonia, Spain

In *Balancing Language Planning and Language Rights: Catalonia's Uneasy Juggling Act* by Charlotte Hoffmann (2000), the Catalans are defined as an atypical minority. Due to the fact that Catalonia itself was a powerful state from the 12th to the 15th century, Catalans have always been the majority group within Catalonia and they have a history of "stubborn resistance to political and cultural assimilation" (426). However, they spent years under the rule of Castilian Spanish rulers, including the time of the dictatorial Franco Regime until 1975. This left Catalan in a diglossic position with a reduced number of speakers, using it only for oral communication. It was also "Castilianised" because it had not had the opportunity to develop modern vocabulary independently (427).

Opportunity for change came from the Spanish Constitution of 1978. It allowed the Catalan Autonomous Community the right to have Catalan as one of its official languages (though not an official language of Spain on the whole) and the right to invest resources in an extensive language revival policy. Also beneficial was that the time spent oppressed by the Castilian Spanish dictatorship gave the use of Catalan a covert prestige in its rebellion against Franco; the importance of this symbol to the Catalan population helped jumpstart public support for the Catalan Autonomous Community's language planning right away (427). According to Hoffman's review, the language policy itself was very thorough: it included corpus planning in the 1983 Law of Linguistic Normalisation for the development of linguistic norms and the extension of the language into international domains like science and technology, and status planning as it was implemented in all public institutions, including Catalan government services

and education (429). De Bres (2008) outlines how Catalan language authorities kept their campaigns relevant by adapting them to contemporary issues. For example, in 2003, when immigration into Catalonia was increasingly salient in public consciousness, the campaign slogan "Tu ets mestre" ("You are a teacher") was used to promote teaching Catalan to immigrants to help them better integrate into society (476) and, presumably, to tempt them away from the allure of Castilian Spanish. By 1996, the amount of Catalan residents able to read and write Catalan had increased from roughly 60 to 80% for both, though Hoffmann notes that this does not reliably represent everyday usage and therefore does not fully encapsulate an increase in vitality (430).

Notwithstanding, the above increases are far beyond any improvements that were made by the Irish language planning attempts. The account of language planning in Catalonia by Hoffmann clearly illustrates that Catalonia boasts both strong public support and effective, consistent language promotion policy. But are there no limitations regarding the fact that it is not an autonomous state and is still ultimately at the mercy of Spanish legislature which has been apathetic at best towards the Catalan language?

Albert Bastardas-Boada addresses these questions in *Language and identity policies in the 'glocal' age. New processes, effects, and principles of organization* (2012). This case study examines Catalonia's language policy as that of a subnational actor in the international system. In this view, Bastardas-Boada recognizes many areas in which Catalonia's lack of statehood is inhibiting Catalan's progression to complete language revival. First, there is no required use of Catalan in Spanish government offices or on official documents because, as mentioned above, Catalan is only an official language of the Catalan Autonomous Community, not Spain as a nation-state. Bastardas-Boada puts this in perspective by relating the fact that the very small Romansh speaking population has this right in Switzerland (2012: 137). Second, Catalan is struggling to receive the status of an official language of the European Union, as this is generally reserved for nation-states (138). Again, the disparity here is clear when we consider that Irish has this status due to Ireland's statehood despite having a much smaller and much less passionate linguistic group overall. Because of these restrictions on the Catalan language, it is limited in its growth beyond the borders of Catalonia and is weakened in its competition with Castilian Spanish for the attention of second language learners immigrating to Spain.

Although the above considerations do not detract from the distinct value of public enthusiasm and a thorough language planning policy, as highlighted in the historical account by Hoffmann, the points that Bastardas-Boada raises are worth noting. Statehood alone was not enough to guarantee the revival of Irish in a post-colonization context; however, there are many rights and advantages granted to languages directly affiliated with a nation-state. Benefits such as national and international official status and connections across policy areas like education and immigration have been outlined above. These affordances do not determine how successful language policies are in the end, but they may set the boundaries for how successful they can be given a high level of public engagement. To further investigate this proposition, I will discuss a linguistic group whose political autonomy is more severely restricted than Catalonia's.

4   Sámi in Norway

In Norway, the Sámi indigenous group has been struggling with the diminished use of their various Sámi languages. Tove Bull, in *The Sámi Language(s), Maintenance and Intellectualisation* (2002), establishes the recent history of the Sámi people as a minority group, assimilated into Norwegian culture as part of the unfortunately familiar pattern of colonization and state building in the 19th century, as the basis for Sámi language planning. In the 19th century, when Norway was in its peak period of nationalism and "Norwegianalization", a destructive set of policies were imposed on the Sámi populations to assimilate them into Norway's mono-culturalism, including a residential school system that separated Sámi children from their heritage and property laws barring those who could not speak Norwegian proficiently from owning property (Bull, 2002: 32). This decimation of Sámi culture continued until after World War II when increased immigration allowed the idea of multiculturalism to re-emerge (Bull, 2002: 32) and when Norway started seeking influence in the United Nations by presenting itself as a leader in humanitarian issues (Bucken-Knapp, 2003: 117).

With the relaxation of the previously militant assimilation of minority cultures came improved political representation for the Sámi people. A major milestone was in 1989 when the first Sámi parliament was formed and the "Sámi Act", which outlined their linguistic rights, followed shortly after (Bull, 2002: 33). This act explicitly stated that Sámi and Norwegian are equal languages in Norway, allowed for the establishment of a Sámi-language teaching college – which remains the only indigenous language higher education institution in the world at the time of writing – and, most importantly, led to the creation of the Sámi Language Council in 1992 (Bull, 2002). This council's agenda is to sustain the Sámi languages by increasing their visibility to the public, leading national and international discourse on their management, and standardizing them by creating new vocabulary in areas such as medicine, sports, and technology (Bull, 2002: 37).

Of the three nations we have looked at thus far, the Sámi people have the least political autonomy, being a minority population without a distinct region over which to govern. Though it does have its own parliament, and within it a Language Council that is mostly in charge of Sámi language legislature, this parliament is technically only "consultative" and depends largely on its ability to influence Norwegian government without actual constitutional rights to do so (Bull, 2002: 34). Crucially, their lack of true independence hinders their attempts at language revival because of the Norwegian territorialization of Sámi language rights, as described in *Your language or ours? Inclusion and exclusion of non-indigenous majorities in Māori and Sámi language revitalization policy* by Nathan John Albury (2015). The Sámi Language Council has the right to implement its policies in "Sámi Administrative areas"; unfortunately for the great many urban-situated Sámi people, large cities like Oslo and Bergen are not part of these areas (Albury, 2015: 326). Therefore, policies that are important to the revitalization of Sámi, like the right for Sámi parents to choose whether their children are taught in Sámi or Norwegian, are not available to considerable portions of the population.

I tentatively concluded above that political autonomy sets the ceiling for potential language revival. In the Catalan Autonomous Community, Catalan language rights are being met, and the language's vitality appears to leave little to be desired; however, when they move

beyond these intra-state borders, there is still a clear disparity between their language and the language of the Castilian Spanish majority. They are also struggling to gain official recognition internationally. Resistance arises outside the domain of control, and the case of Sámi further confirms this conclusion. The impositions of the Norwegian government on their linguistic development and preservation obstructs their progress at a more critical level: they do not have a single contiguous territory over which to administer their language policies, and without widespread support from the national government, much of their population thus lives outside of scope of these initiatives.

While the statehood of a linguistic group does not entail the success of language planning policies (as is evident in the lack of success by the Republic of Ireland), autonomy at a national level provides a solid foundation of rights on which to form an effective language policy. Crucially, a lack of autonomy makes a population seeking linguistic change much more vulnerable to factors outside of their control, such as the particular type of involvement from the overarching government. On the one hand, a thorough language planning strategy, with the support of a nation-state's resources (or at least its grant of freedom), can provide important first steps towards successful language shift reversal. On the other hand, restrictions from above, such as the territorialization of language rights in Norway and the resistance of the European Union to officially recognize Catalan, can become virtually unyielding obstacles.

To evaluate cross-case variation in public engagement among linguistic groups, I return to Bull's account of Sámi. In her concluding remarks, Bull highlights the active and enthusiastic use of Sámi in densely populated Sámi regions across administrative, educational, and family institutions (2002: 38). Most importantly, they have continued intergenerational transfer of their language; in fact, the prevalence of intergenerational transfer with the current generation is stronger than any of the three generations previous (38). Bull also mentions an increasing use of traditional Sámi geographical names (38), for which, interestingly, there was a perfectly opposing situation in Ireland in 2005. The Official Languages Act of 2003 stated that place names shall be shown in Irish and English on public signage, and this was met with what Ó Laoire deems "bottom-up resistance to top-down planning" when citizens protested, citing concerns that it would interfere with local business and tourism (2005: 304). This example brings two important points to the forefront: firstly, the Sámi people are not faced with the worldwide hegemony of the English language on a day to day basis the way the Irish are and always have been; secondly, this very difference, like any contextual variable in diverse language planning situations, is indicative of the priorities of the general population, and thus, the success of the language policy within the limits their autonomy affords.

5   Conclusion

To summarize, the time of most widespread interest in the revival of Irish, according to Ó Laoire's account (2005), was before the independent Republic of Ireland was born, when the priorities of the Irish people centred around what was theirs alone, not Britain's. After the creation of the Irish state, the desire for the Irish language as a separate entity from national independence was not strong enough to trump the benefits and easy accessibility of the English language. Thus, ongoing attempts of governing bodies to revive the language have been altogether unsuccessful.

In contrast, for the Catalan people, the years spent under dictatorship sharpened their centuries old sense of Catalan identity and led them to prioritize the revitalization of their language, despite the analogous-to-English ease with which they could have deferred to Castilian Spanish. This commitment resulted in an incredibly successful language policy and has remained fundamental, as evidenced by the importance of the Catalan language to their struggle for national independence from Spain (Minder, 2017). Whether the same level of enthusiasm would persist after separating from Spain — that is to say, how they compare following further in the footsteps of Ireland — would be an interesting opportunity for further analysis. Furthermore, the Sámi people, with significantly less political power in Norway, are maintaining a healthy language vitality to the limited extent their dispersed policies allow, perhaps because they too associate language strongly with their identity and there is less linguistic competition in the region. In conclusion, the language planning situations in Ireland, Catalonia, and Norway prove that while the presence and nature of an overarching government greatly influence the degree to which language policies may ideally succeed, it is the commitment of the general public that will ultimately determine, within their abilities, whether or not their language will be successfully revitalized to a sustainable and lasting level of stability.

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Interpreting External Possession in Malagasy

Tallis Clark

Abstract

In Malagasy, a predicate-initial Austronesian language spoken in Madagascar, possession may be encoded in three prominent constructions. This paper focuses on explaining the semantic structure of one of these three, the External Possession construction. This construction is formed by compounding a noun with an adjectival modifier to form a predicate, which then takes a grammatical subject which possesses the modified noun:

(1) [PRED Tso-piainana] izy.
             simple life   3sg.NOM
     'He has a simple life.'

This construction is compared with the structurally-similar *manana*-possession. In External Possession, the possessor appears as a grammatical subject to an intransitive possession predicate, while in *manana*-possession the possessor forms as a grammatical subject to a transitive verb *manana* 'have.' Its form is shown in (2):

(2) [VP Manana fiainana tsotra] izy.
            have   life   simple 3sg.NOM
    'He has a simple life.'

In External Possession, the possessor's relationship with the possessed entity must come from the definition of the possessed entity. This is shown by the possible interpretations of each construction's relationship between the possessor and that which is possessed. Using the concept of relational nouns given in Barker (2019) as a noun which implicitly denotes a relationship between the noun itself and some other entity, I propose that Malagasy External Possession constructions can be understood as grammaticalizing that implicit relation into a subject and its predicate. In this case, the grammatical subject's semantic role is the related entity, and the predicate is a compound formed from the relational noun and some modifier. To account for the necessity of modification to the predicate, I adopt the Restriction operation of Chung and Ladusaw (2003).

1 Introduction

In Malagasy, an Austronesian language spoken in Madagascar, an adjective may appear either as a modifier, in which case it postposes the modified noun, or as a sentential predicate, in which case it appears phrase-initially as other predicates. This is demonstrated in (1).[1]

(1) a. [PRED Vaky   ] ny   vera
              broken   DET cup
          'The cup is broken'

     b. [PRED Mamaky   ny   boky tsara] aho
              PRS.AT.read DET book good   1sg.NOM
          'I read a good book'

Malagasy may additionally, however, place a noun after its modifier, in which case the modifier + noun acts as the predicate to another nominal element. In such cases, it is often useful to translate into English with forms like *brown-eyed, long-legged, mean-tempered*, for reasons that will be explained in section 5. It is not always possible, however, to translate cleanly this way. (2) shows both these possibilities:

(2) a. [PRED Be sandry] Rabe
              big arms   Rabe
          'Rabe is big-armed.'

     b. [PRED Tsara famaky] ny   boky.
              good read   DET book
          'That was a good read'

This construction, referred to as External Possession, lacks any specific morpheme which denotes possession explicitly. Despite this, the modified noun is understood to be a quality or part of, a property of, or possessed by the subject which forms with the predicate. I argue here that this interpretation is the result of the lexical properties that the modified noun must contain, and that it is this which allows for this construction to be interpreted as such without explicit morphology. This possession relation arises from the requirement that a possessum – a possessed entity – introduce this relationship lexically. A linear schematic for this construction is shown in (3):

(3) [MOD NP] DP

Superficially the relationship between an external possessor and that which is possessed may be paraphrased with the word *have* in English. As a general rule this fails in Malagasy, as paraphrases with the lexical verb which introduces possession, *manana*, do not work in every

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[1]The following abbreviations are used in this paper: PR – Possessor, PM – Possessum, AT – Agent Trigger, TT – Theme Trigger, CT – Circumstantial Trigger, DET – Determiner, NOM – Nominative case, ACC – Accusative case, GEN – Genitive case, PRS – Present, PST – Past, FUT – Future, PREP – Preposition, DP – Determiner Phrase, NP – Noun Phrase, AP – Adjective Phrase, RC – Relative Clause, sg – Singular, pl – Plural, 1,2,3 – First, second, third person, FOC – Focus, LNK – Linking morpheme, PRED – Predicate, FA – Function Application, Mod – Modifier

case. I take this as evidence that the possession relation present in External Possession examples is not introduced into the denotation as a null version of the possessive verb.

In section 2, I go over the relevant syntactic background in Malagasy and describe the language's various possession constructions and how they form. In section 4, I describe the limitations on the interpretation of External Possession constructions, and the motivation for assuming the root-introduced relation which I propose gives the construction its meaning. In section 5, I summate the analysis of this phenomenon in Paul (2009) and the evidence it provides for this claim. Finally, in section 6, I propose a general denotation for this construction.

2   Malagasy Background

Malagasy is a macrolanguage of Madagascar, part of the Greater Barito linkage of the Malayo-Polynesian branch of the Austronesian family (Hammarström et al., 2020). It is spoken by about 18,140,080 people in all Malagasic languages, 7,520,000 of which speak Plateau Malagasy, in and around the capital Antananarivo (Eberhard et al., 2020). The data discussed here are in the Plateau Malagasy language.

2.1   The Malagasy Voice System

Malagasy has a morphosyntactic voice system in which the "subject" or "trigger" DP[2] has a specific thematic role depending on the voice. In this paper, this structural position will be referred to as the TRIGGER. The various voices are similar, but not identical to the active-passive alternation found in diverse languages.

These voice alternations trigger morphosyntactic changes. The various voices have a morphological reflex on the verb, and the syntax of the clause will change depending on the voice of the matrix clause, as will now be described: The Agent Trigger (AT) form takes an agent for its trigger, a DP which purposefully affects the verb and complement (if there is one). The Theme Trigger (TT) form often takes a theme as its trigger, a DP which suffers or undergoes the verb's action. Finally, in the Circumstantial Voice (CT) form the trigger is some other oblique element, one which is not an obligatory argument of the verb. The trigger here is a DP alone, which may be compared to non-CT forms of the same verb, as it is important to note that this DP must be introduced with a preposition. The trigger is underlined here, and voice morphology on the verb is marked in bold.

(4)   a.   Agent Trigger (AT):

Na-maky   ny vera amin'ny vato <u>ny</u> <u>zaza</u>.
AT.PST-break DET cup PREP'DET stone <u>DET</u> child
'The child broke the cup with the stone'

   b.   Theme Trigger (TT):

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[2]There is much discussion on this position in Malagasy and its properties. For discussion on this topic, see Keenan (1976); Guilfoyle et al. (1992); Pearson (2005). The forms of these voices are described briefly here but no particular model of the syntax of voice is argued for here, as this model may be adapted to any of the above analyses.

    c. Vaki-**an**'ny   zaza amin'ny vato ny vera.
       broken-TT'DET child PREP'DET stone $\overline{\text{DET}}$ glass
       'The glass is broken by the child with the stone'

    d. Circumstantial Trigger (CT):

       A-maki-**an**'ny   zaza ny vera ny vato.
       CT-break.PRS-CT'DET child DET cup $\overline{\text{DET}}$ stone
       'The child breaks the cup with the stone'

The trigger has its own specific properties — it must be definite, and it is the only unit which may be extracted. This may be seen in (5), where the DP *ny trondro* 'the fish' may appear at the beginning of the clause, as opposed to the end, if it is accompanied by the focus particle *no* (Keenan, 1976).

(5) ny trondro$_i$ no didi-**an**'ny vehivavy t_i
     DET fish   FOC cut-TT'DET girl
     'It's the fish that the girl cut.'

It is important to note here that the semantic role of the agent in non-AT verb forms bears the same syntactic relation to the agent-assigning verb as a possessor within a DP is to its possessum. In both cases, the agent/possessor cliticizes to the verb/possessum. This correspondence is described in more detail in section 3.1. This may be seen to reflect a certain correlation between the semantic roles of the possessor and agent. This is not unfamiliar in English, as shown in (6), where the nominalized form of a sentence will take its agent as a possessor. I do not offer any generalization for this pattern either in Malagasy or English, but rather mention it to show that the semantic roles of different constituents' dependents may overlap syntactically.

(6)   a. The artist$_{agent}$ created a masterwork$_{theme}$.

      b. *Nominalization*: [DP The artist's$_{agent}$ creation of a masterwork$_{theme}$.]

2.2 Clause Ordering

Malagasy adjuncts will follow the head that they modify. This extends obviously to adjectives and relative clauses, prepositional phrases, and deictic elements.

(7)   a. Ma-hita   **vonikazo** [$_{AP}$ mangamanga] aho.
       PRS.AT-see flowers   blue   1sg.NOM
       'I see blue flowers.'

      b. Mahita   **ny saka**$_i$ [$_{RC}$ (izay) nihinana ny trondro-ny] izy.
       PRS.AT.see DET cat   (COMP) PST.AT.eat DET fish-3sg.GEN   3sg.NOM
       'She sees the cat who ate her fish.'

In External Possession, however, the adjective precedes the noun it modifies, and a second noun appears finally, which is understood to be the possessor of the modified noun. The puzzle involved with explaining the formation of External Possession in Malagasy lies in explaining how an adjective can still modify a noun when placed before it in this construction. The syntax of this construction is explained in section 5, and the semantic implications in section 6.

3 Possession Strategies in Malagasy

As the purpose of this paper is to explain the differences in interpretation between various possession strategies, I will here lay out the basic composition of each of Malagasy's three major possession strategies. I focus on the differences between the possession strategies that grammaticalize the possessor as a trigger in this paper (External and *manana*-possession), but I describe Internal Possession (where the possessor appears within the possessum DP) nonetheless so as to provide a comparison with non-predicative possession. In this section, all possessors are marked in bold, while possessa appear italicized.

3.1 Internal Possession Construction (IPC)

The Internal Possession Construction in Malagasy is differentiated by a number of features. First, the POSSESSUM (PM) – that which is possessed, or a part or quality of the POSSESSOR (PR), which it has control or determination over or is the whole of – is the head to which the possessor is its dependent, and appears morphologically as a verb to an agent in a non-AT clause. In the IPC, the possessor appears internal to the DP containing the possessum, cliticized to the possessum. This is done through a 'linking' morpheme in the case of a non-pronominal possessor.[3] Pronominal possessors take GENITIVE case, and cliticize to the possessum. This is demonstrated in (8a).

(8) a. Rava   *ny trano*-**n'ny**   **nama-ko**
         destroyed DET house-LNK'DET friend-1sg.GEN
         'My friend's house is destroyed.'

     b. Nanamboatra *ny fiara*-**ko**   Rabe
         AT.PST.fix   DET car-1sg.GEN Rabe
         'Rabe fixed my car'

Note that the possessor takes the same form in this case as a thematic agent in the non-Agent Trigger voices described in §2.1; This may be seen in (9):

(9) a. Hoan-i-**ko**   ny manga
         eat-TT-1sg.GEN DET mango
         'The mango is being eaten by me'

     b. lehibe *ny   trano*-**ko**
         big   DET house-1sg.GEN
         'My house is big'

The possessor may appear in an external phrase to the possessum in two cases: First, when the possessum pseudo-incorporates into a predicate, following Paul (2009). The syntax of this is explained fully in §5. This is the External Possession construction. Second, when the possessum is introduced as the object of a lexical verb analogous to the English *have*, in the *Manana*-possession construction.

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[3]For more on the 'linker,' see Keenan (2000).

3.2 External Possession Construction (EPC)

In External Possession, the possessor appears as the sentential trigger with nominative case (as other triggers), and the possessum appears within the same phrase as its modifier, forming a cohesive predicate phrase. Unlike both the IPC and *manana*-possession, there is no overt morpheme in the sentence which denotes the possession relation between the possessor and possessum. (10) shows examples of EPCs in clauses.[4]

(10) a. Tso-*piainana* **ny mpamboly**.
          simple-life   DET farmer
          'The farmer has a simple life.'

      b. Very *hevitra*   **Rakoto**
          lost thoughts Rakoto
          'Rakoto is confused.'

Table 1 shows a number of possible EPC predicates in Malagasy, separated by broad semantic typology:

Table 1: A sample of EPCs by predicate type

	Example	Composition	Translation
Quality	*madio akanjo*	clean + clothes	'clean-clothed'
	ratsy fanahy	bad + spirit	'mean'
	tso-piainana	simple + life	'(have) a simple life'
	tsara tarehy	good + face	'beautiful'
Dimension	*lehibe vatana*	big + body	'big-bodied'
	be nify	big + tooth	'big-toothed'
	lava volo	long + hair	'long-haired'
Colour	*fotsy volo*	white + hair	'white-haired, old'
Quantity	*maro karazana*	many + types	'(be) of many types'
	be trano	lots + houses	'(have) a lot of houses'
Event	*very hevitra*	lost + thoughts	'confused'
	rovi-body	torn + bottom	'(have) a torn bottom'
Human propensity	*kinga saina*	adroit + mind	'quick-minded, smart'
Unaccusative V	*miasa loha*	works + head	'worried'
	miasa vatana	works + body	'exercises'

3.3 *Manana*-possession

In addition to the two other constructions, possession may be expressed by the verb *manana* which behaves much like the English *have*, grammaticalizing the possessor as a trigger and the possessum as an object.

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[4]A number of these External Possession constructions seem to be variable either between speakers or over time, as a number of the sentences in the landmark study of the phenomenon, Keenan and Ralalaoherivony (1998), were rejected as either ungrammatical or grammatical but incoherent.

(11) a. Manana *vola*   *betsaka* **ny** **mpandrafitra**.
        have   money much DET carpenter
        'The carpenter has a lot of money.'

      b. Te   h-anana   *alika* **aho**.
        want FUT-have dog 1sg.NOM
        'I want a dog'

4   Interpreting External Possession

The different qualities of External Possession distinguish the construction from the *manana*-possession form which may contain identical lexical elements. These qualities show the ways in which the interpretations differ when this is the case. In this section I will cover a few of the ways the interpretation of an EPC either changes or becomes ungrammatical when in the form of *manana*-possession. I take this as evidence that External Possession involves an abstract relation which is not equivalent to that which *manana* denotes. I motivate this analysis syntactically in section 5 by assuming Paul's (2009) syntactic analysis of Malagasy External Possession.

4.1 Possessor Affectedness/Control

The External Possession Construction cannot be said to express 'possession' in an equivalent sense to the *manana* construction. Instead, that the relation between EPC-possessor and EPC-possessum is one of interconnectedness – anything that affects one affects the other. An EPC may form out of elements which disallow *manana*-possession.

This arises from the fact that *manana*-possession may be incoherent or ungrammatical in a case where an EPC composed of the same elements is acceptable. It may be seen in (12) that an EPC may be used in a case which renders *manana*-possession ungrammatical, possibly due to the contradictory interpretation of "having" an item which is obligatorily not in one's own possession.[5]

(12) a. **Very asa**   ny namako.
        lost   work DET friend.1SG.GEN
        'My friend lost their job.'

      b. *Manana **asa**   **very** ny namako.
        have   work lost DET friend.1SG.GEN.
        Intended: 'My friend lost their job.'

There is a distinction between a possessum which the possessor has control over and a possessum which affects a possessor by an implicit relationship between the two. For example, in (12a), DP *ny namako* 'my friend' is able to grammatically 'possess' a job that has been lost not because they control it, but because the job is implicitly understood to be the friend's, anything that affects it will impact the friend. This may be compared with (12b), in which the possession relation between the same elements is unacceptable.

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[5]Thanks to Jessica Coon for pointing out this fact.

In cases in which both *manana-* and external possession are permissible, the interpretation changes to reflect whether the sentence expresses control over the modified possessum or the experience of modification of the predicate. To this end, compare (13a) with the example in (13b). Each is grammatical in its own given context, but unacceptable in the other's context. That is, it would be inappropriate to say *Manana pneu vaky aho* 'I have broken wheels' when explaining why one is late, and vice versa (Vololona Razafimbelo, p.c.).

(13) a. Manana **pneu vaky**   aho.
          have   wheel broken 1sg.NOM
          I have broken wheels.   (Context: I own a junkyard containing broken wheels)

     b. **Vaky   pneu** aho.
          broken wheel 1sg.NOM
          I have a flat tire.   (Context: I'm calling to tell my boss why I am late)

4.2 Partitivity, Inalienability, and Implicit Relation

An EPC predicate is often a part, quality, or inalienable possession of the sentential possessor, which is interpreted as the whole, the one with that quality, or the inalienable possessor. Note that there is no grammatical reason to separate these categories, and no distinction between them may be found in the formation of EPCs:

(14) a. **Quality:**

          Tsara fanahy ny   olona.
          good spirit   DET people.
          'People are good-spirited.'

     b. **Part:**

          Lehibe vatana ny   hazo sequoia
          big   trunk   DET tree   sequoia
          'Sequoia trees are big-trunked.'

     c. **Inalienable Possession:**

          Kinga saina izy.
          adroit mind 3sg.NOM
          'They are quick-minded.'

From this, it may be seen that the possessor and possessum implicitly necessitate each other's logical existence. For example, the use of *vatana* 'trunk' or 'body' must directly correlate to something which has a trunk or a body – the word itself is possessed, but the possessor is understood logically and not required in the utterance itself. The fact that the possessor is an inherent part of the possessum is demonstrated in (15). This example shows that in a minimal pair composed with identical possessors and modified possessa, the interpretation varies in whether or not the 'bad spirit' is inherent to the child or not; the *fanahy* in (15a) is the child's own, while in (15b) this is explicitly not the case.

(15) a. **Ratsy fanahy** ny   zaza.
          bad   spirit   DET child
          'The child is mean.'

      b. Manana **fanahy ratsy** ny   zaza.
          have   spirit   bad   DET child
          'The child is possessed.'
          literally: 'The child has a bad spirit.'

4.3 Modification Affectedness

It may also be seen that the interpretation of the EPC is that the fact that the modification of the possessum affects the possessor, as demonstrated by (16). In (16a), the carpenter is rich, but in (16b), the carpenter may be poor, but carrying a lot of physical money with them (Vololona Razafimbelo, p.c.). This exemplifies the distinction between experiencing the plurity of money as related to the possessor in (16a) and having control over the entity denoted by *vola* 'money' in (16b)

(16) a. **Be   vola** ny   mpandrafitra.
          much money DET carpenter
          'The carpenter is rich.'

      b. Manana **vola   be**   ny   mpandrafitra.
          have   money much DET carpenter
          'The carpenter has a lot of money.'

Additionally, there is a distinction between *manana*-possession and EPCs when it comes to the quality of the possessor. Using the same example as above, (17) shows that the possessor *ny mangazay* 'the store' is allowed with *manana*, but incoherent when expressing possession over an EPC. Under the generalization that EPC predicates attribute the affectedness of the possessor by the possessum modification, this may be understood as a restriction on EPC-possessors which may not be pragmatically construed as having an inherent relation to the possessum which would necessitate affectedness.

(17) a. Manam-bola(=manana vola) be   **ny   mangazay**.
          PRS.AV.have-money   much DET store
          'The store has lots of money.'

      b. #Be   vola   **ny   mangazay**.
          much money DET store
          'The store has a lot of money.'

      c. Be   vola   **Rasoa**.
          much money Rasoa
          'Rasoa is rich.' (not necessarily physical money)

In comparing these details of the interpretation of EPC predicates against *manana*-possession, I come to the following generalizations: first, the possessor of a possessum within an EPC must have a relation to the possessum which necessitates the 'affectedness' of the possessor, and second,

that this is distinct from the possession expressed by *manana*, although the two may form with identical elements, as in (15) and (16).

From these facts, I suggest that the affectedness interpretation of EPCs comes about due to the possessum being inherently related to the possessor by virtue of being a relational noun, i.e., one denoting a 2-place predicate (Barker, 2019). The implications for this are discussed in section 5. Therefore, as the possessor must be interpreted as affected and often the possessum is obviously a part or quality of the possessor, I argue that the possessor is the argument introduced by the relational noun in logical interpretation. This interpretation follows from the binding analysis between possessor and relational argument proposed by Paul (2009). This too will be explained in section 5.

5 Analyzing External Possession

5.1 Pseudo-Incorporation Analysis

Paul (2009) argues that these cases of External Possession form through pseudo-incorporation of a bare NP possessum to a predicate which modifies the possessum. Under this analysis, the possessum appears as a bare NP complement to the predicate. This unit then merges with a functional head labelled v_{have} which introduces the possessor in its specifier. The possessor binds to a covert (unrepresented in the phonetic form of the phrase) argument position within the predicate, which I take to necessitate. This possessor then moves to the trigger position, which is represented here in (18), as in Paul (2009) as the specifier of TP, although this analaysis does not exclude other analyses of the Malagasy trigger that place it elsewhere in the structure.

(18)   a. Fotsy nify Rabe.
       White teeth Rabe
       'Rabe has white teeth.'   (Paul, 2009, 13a.)

       b. (Paul, 2009, 13b.)
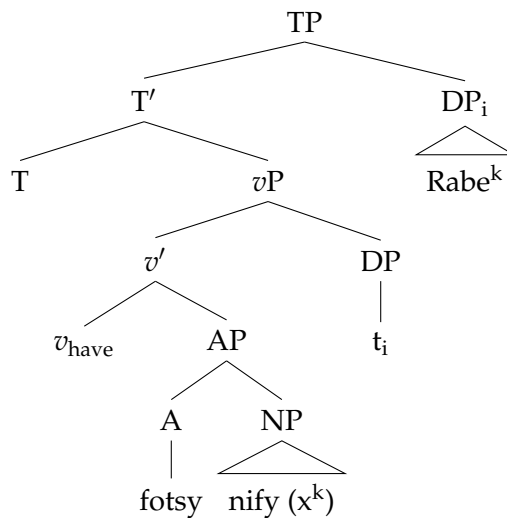
Paul's (2009) analysis includes a variety of constructions that all share the property of a binding relation between the 'external possessor' and some unfilled argument. In EPCs, this

unfilled argument position is one that is introduced implicitly by a relational noun, represented in (18b) by (x^k), which is merely shorthand for the this argument, where superscript 'k' shows that this argument is co-indexed with *Rabe* here.

The existence of this implicit argument is motivated by two facts: First, that the possessum of a Malagasy EPC is "often a relational noun, one that expresses a relation between objects rather than just a property of objects" (Keenan and Ralalaoherivony, 1998, §1.3.1). Some various possible possessa to this effect are shown in table 2. Secondly, the nature of relational nouns is that they introduce an implicit relation with the root nominal. Barker (2019) defines relational nouns as those which denote 2-place relations. This importantly allows for both the explicit entity (in EPCs, the possessum) and the related entity (in EPCs, the possessor) to be included in the denotation of the predicate without being introduced by any covert head in the syntax. Therefore, I take v_{have} to be a structural requirement of introducing an argument overtly, but in interpreting an EPC, a new argument – one not already introduced by a relational noun – may not merge with v_{have} as a possessor. In this view, the possessum must obligatorily contain two arguments, which is expected following Barker (2019); both elements of the two-place relation are overt in this construction.

Table 2: A sample of a few types of externally-possessable nouns.

Personal possessions		Body parts		Characteristics	
Ex.	Trans.	Ex.	Trans.	Ex.	Trans.
trano	house	*vatana*	body	*feo*	voice
fiara	car	*tanana*	hand	*endrika*	appearance
vola	money	*tarehy*	face	*karazana*	types
akanjo	clothes	*pneu*	wheel	*asa*	job
lakile	keys	*nify*	teeth	*fanahy*	spirit

I take the v_{have} head here to be analogous to the little *a* head *-ed* in English which forms External Possession adjectives from a relation (such as *blue-eyed, long-legged, three-toed, quick-witted*). This *-ed* morpheme in English denotes the following in (19) from Nevins and Myler (2014), which states that a^0 produces a predicate from a relation *R*:

(19) $[\![-a_{-ed}]\!] = \lambda R_{\langle e, \langle e, t \rangle \rangle}.\lambda x_e.\exists y_e.[R(x)(y)]$ (Nevins and Myler, 2014, (11))

I propose that this denotation may be readily adapted to Malagasy with little alteration, as shown in section 6.

Malagasy EPCs are interpreted similarly despite their diverse forms and lack of a common morphological reflex between them expressing the relationship between possessor and possessum. Per this analysis, I propose that Paul's v_{have} is the syntactic reflex of grammaticalizing a root-introduced binder into the phrase as an overt element rather than introducing the possession relation itself.

6   EPC Decomposition in Malagasy

Given the facts of EPCs discussed above, I propose the following general schematic for the denotation of Malagasy EPCs, followed by an example. I take the relation *R* here to denote

any logical relation between the possessum and the possessor that is present, whether an implicit whole to a part, possessor/owner, or quality. For the decomposition of the Adjective-Noun predicate, I tentatively propose that this is an example of the Restrict function of Chung and Ladusaw (2003), explained below. The existential quantifier over the variable y I take as derived from the fact that there is no overt entity which is specified to be the modified possessum. The reality of this is explored below. With these facts in mind, I take the schematic denotation of EPC predicates to match (20):

(20) $\llbracket EPC \rrbracket = \lambda P(y)_{\langle e,t \rangle}.\lambda Q(y)_{\langle e,t \rangle} \lambda R_{\langle e,\langle e,t \rangle}.\lambda x_e.\exists y_e.[R(x,y) \& P(y) \& Q(y)]$

In the final denotation, it may be seen that the possessum is an $\langle e, t \rangle$ function. While I am generally agnostic as to whether this is truly the case, I suggest it may explain the requirement observed by (Keenan and Ralalaoherivony, 1998, (15)) that the possessum be indefinite or generic. Assuming here that an indefinite noun is an NP and not a DP, and that an NP is an $\langle e, t \rangle$ function in order to form a generic predicate nominal, as in (21):

(21) [_{PRED} Biby   ] ny   saka.
        animal   DET cat
      'The cat is an animal.'

Taking $\llbracket biby \rrbracket$ as the $\langle e, t \rangle$ function $\lambda x_e.\text{Biby}(x)$, (21) takes a single entity, here **ny saka**, producing a semantically complete sentence:

(22) $\llbracket biby\ ny\ saka \rrbracket = \lambda f_{\langle e,t \rangle}.\lambda x_e.f(x)$**(Biby)**
      $\lambda x_e.\text{Biby}(x)$**(ny saka)**
      Biby(ny saka)

The required indefiniteness of the EPC possessum therefore may be seen to motivate the adoption of Chung and Ladusaw's (2003) PREDICATE RESTRICTION operation. If both the modifier of the possessum and the possessum itself are naturally of type $\langle e, t \rangle$, then how may the 'modified possessum' interpretation arise, if there is no entity to saturate the argument of the modifier $\langle e, t \rangle$ function? The predicate restriction operation shows that this is possible by restricting the domain of the modifier to the subdomain which has both the property of the modifier and the property of the generic possessum. The function of this operation is shown in (23):

(23) Restrict $((\lambda y \lambda x\ [\text{feed}'(y)(x)], \text{dog}')$ (Chung and Ladusaw, 2003, (12))
      $= \lambda y \lambda x\ [\text{feed}'(y)(x) \& \text{dog}'(y)]$

Applying this same function to the Malagasy EPC examples derives the following practical example. (24b) shows the proposed composition of the sentence in (24a):

(24) a. Lehibe vatana ny   hazo.
         big   trunk   DET tree.
         'The tree is large-trunked.'

b. $\lambda P(y)_{\langle e,t\rangle}.\lambda Q(y)_{\langle e,t\rangle}.\lambda R_{\langle e,\langle e,t\rangle\rangle}.\lambda x_e.\exists y_e.[R(x,y)\ \&\ P(y)\ \&\ Q(y)]$
The schematic for a Malagasy EPC.[6]
FA $\lambda P(y)_{\langle e,t\rangle}.\lambda Q(y)_{\langle e,t\rangle}\lambda R_{\langle e,\langle e,t\rangle\rangle}.\lambda x_e.\exists y_e.[R(x,y)\ \&\ P(y)\ \&\ Q(y)](\lambda y_{\langle e,t\rangle}.\textbf{Lehibe(y))}$
*The predicate **lehibe** 'is big' joins through function application, taking the place of the arbitrary function $P(y)$.*
Restrict $\lambda Q(y)_{\langle e,t\rangle}\lambda R_{\langle e,\langle e,t\rangle\rangle}.\lambda x_e.\exists y_e.[R(x,y)\ \&\ \text{Lehibe(y)}\ \&\ Q(y)](\lambda y_{\langle e,t\rangle}.\lambda x_e.\textbf{Vatana(y) \&}$
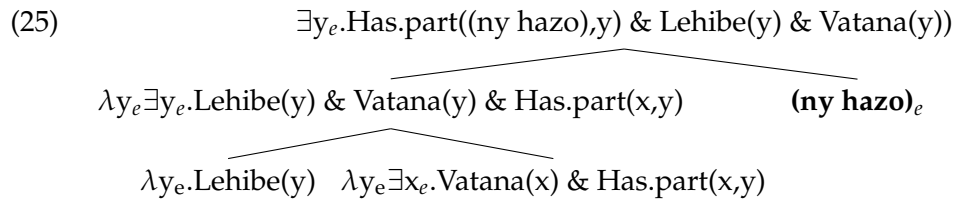**Has.part(x,y))**
The NP-predicate/possessum merges by restricting the function $P(y)$, and the implicit relation merges with the function $R(x,y)$.
FA $\lambda x_e.\exists y_e.[\textbf{Has.part(x,y)}\ \&\ \textbf{Lehibe(y)}\ \&\ \textbf{Vatana(y)}]\textbf{(ny hazo)}$
Finally, the single entity merges as the unquantified argument x
$[\![Lehibe\ vatana\ ny\ hazo]\!] = \boxed{\exists y_e.[\text{Has.part((ny hazo),y)}\ \&\ \text{Lehibe(y)}\ \&\ \text{Vatana(y)}]}$

This may be represented in tree form as (25):

(25) $\exists y_e.\text{Has.part((ny hazo),y)}\ \&\ \text{Lehibe(y)}\ \&\ \text{Vatana(y))}$

$\lambda y_e\exists y_e.\text{Lehibe(y)}\ \&\ \text{Vatana(y)}\ \&\ \text{Has.part(x,y)}$ $\textbf{(ny hazo)}_e$

$\lambda y_e.\text{Lehibe(y)}$ $\lambda y_e\exists x_e.\text{Vatana(x)}\ \&\ \text{Has.part(x,y)}$

The final denotation may be therefore paraphrased as: "There is something such that *ny hazo* has it as a part, and it is both big and a trunk."

7 Discussion

The issue remains of explaining the requirement for an EPC possessum to be modified by an adjective. The answer may be pragmatic in nature, if it is incoherent for the affectedness interpretation of the construction not to be somehow used in the reading. English, having the overt derivational morpheme *-ed* that forms an adjective from the EPC relation, has a clear example of an externally possessed unmodified possessum (Nevins and Myler, 2014, (19)) in (26). The exact criteria that necessitate a modifier on an externally-possessed possessum I leave for further work.

(26) John is bearded.
$\Rightarrow$ John has a beard.

Secondarily, the question remains of the use of Malagasy EPCs in discourse. They may be used as predicates or attributes in various forms, and may occasionally undergo nominalization without overt morphological change, as in *menamaso* – the name of a political group in 19th century Madagascar, or *ratsy fanahy* 'a mean person.' These two examples, of which there may be more, appear to be EPCs based on the adjective-initial order. Compare these with forms such as *ranomasina* 'ocean, lit. water-holy' in which the modifying adjective comes after the head nominal as in standard non-compounded attribution.

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[6]Note that the existential quantifier over the argument *y* is not introduced by any compositional element, but rather arises out of the syntactic schematic that the various elements are applied to under the application of semantic rules.

The question of the role of a modifier in external possession constructions cross-linguistically may also be considered in relation to the problems of interpreting EPCs discussed here. More broadly, the general requirement that exocentric compounds – those which refer to an entity not found within the literal meaning of its components – be composed of more than one discrete term is a remaining issue that I leave for later work.

8   Conclusion

The various features of the relation between possessor and possessum in Malagasy External Possession may be uniformly explained by assuming that the relation is introduced by the possessum noun root. Under this analysis, inherent involvement of the possessor, lack of possessive morphemes, and the requirement that the possessum is a relational noun, are each explained. The inherent involvement criterion is explained by the fact that, following Paul (2009), the grammaticalized possessor/trigger is coreferenced with the implicit relation introduced by the possessum. The lack of possessive morphemes is explained by the lack of external functional heads which introduce a possession relation between entities; the relation is lexically based on the inclusion of the possessum. As for why the possessum must be a relational noun, without the implicit relational argument, there could be no specification of the related entity which provides the possessor with the ability to be an element of the denotation.

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The Language of the Masses (of Online Media)

Christiane-Marie Cantwell

Abstract

This paper aims to counter the belief that the language used in technology-based mass media is rapidly becoming a homogenous entity. Through a review of existing literature on web-based language complemented with folk examples, this paper illustrates that linguistic diversity is fostered in technology-based mass media in two ways. Firstly, online media creates new virtual communities of practice that develop their own linguistic variants. Secondly, technology-based media, such as social media, allows individuals to transcribe local variants of spoken language as markers of identity, thereby transferring offline linguistic variation online. Once it is established that linguistic variation is maintained in online linguistic forms, Squires's theory of enregistrement is used to explain the existence of the assumption that online languages change faster than offline languages. This theory, in conjunction with previous research on the relationships between spoken language and virtual language in a set community of practice, is then applied to counter the assumption and illustrate that technology-based mass media do not increase the speed of language change.

Essential to the field of sociolinguistics is the tenet that human language constantly changes. However, this does not necessarily mean that such changes occur at the same rate. Indeed, through technology, language seems to change quickly and drastically; new linguistic forms emerge, different from their standard counterparts, and conventionally, these rapidly evolving globalized forms of language are understood to limit linguistic variation. In this essay, I challenge the idea that homogeneous language forms rapidly supersede all regional and social variants online. Instead, I show that technologically-based mass media in fact encourages linguistic variation at a normal rate, demonstrated through three themes: the advent of new internet-based communities of practice, users' transcription of regional varieties of language online as virtual markers of identity, and the rate of change of language online being equal to the rate offline.

The idea of community of practice is integral to the development of several variations of language online. Communities of practice are "a collection of people who engage on an ongoing basis in some common endeavour" (Eckert, 2006). Conducting sociolinguistic research on the basis of communities of practice rather than speech communities allows for a fluidity in the members' identity, who define themselves through their groupings, and can belong to many groups at once (Eckert, 2006). The traditional view of communities of practice, especially in Eckert's study, relegates them to the world offline, usually seeing their effect on speech[1]. However, the idea can easily transfer to virtual mass media. Take, for example, Twitter or Tumblr, both microblogging sites, which operate based on spontaneous creation of content and the subsequent interactions between users. Fandoms, as defined as groupings of people online positioned around common interests, such as television shows, video-games, movies, etc., develop specific lexical tokens that relate to their web-based linguistic community, which people outside of the group would not use. Importantly, online communities of practice originate in the virtual world, with members having little to no physical contact with each other, at least initially. Their membership is performed solely on technologically-based mass media. Eventually, a community will grow to such an extent that the contact begins to occur off-line, as does the specific language they have been using.

A key example of a fandom constituting a sociolinguistic group is "Bronys", adult (usually male) fans of the show "My Little Pony" (MLP), who have developed an extraordinary community of practice online. This community is entirely focused around mass media (i.e. the television show, and the products of it on the Internet such as memes) and their language reflects this, especially lexically. Self-styling as "Bronyspeak", their communication is conducted almost exclusively in English, with references to the show mixed in. It is in no way a new language, but just a different register, solely created online. According to Whatisabrony.com (2017), a fan-run website, words specific to this community include many references to MLP, like "20% Cooler", which can either be a marker of a positive or negative situation. This illustrates a certain semantic shift depending on the situation in which the utterance occurs. It also includes euphemisms, such as "hay" for "hell", and portmanteaus like "brofist" which indicates an online fist bump between two members of the community and, indeed, "brony", a mix of "bro" and "pony". This linguistic variation is promoted by the virtual mass-media, since this terminology was first only used

[1] see Eckert (1989) for the study of social groups in a Detroit high school

online. However, Bronys have taken their variation of language off-line and into spoken communication. The community began on the Internet, but grew to such extents that fans started to have conventions—much like "Trekkies", superfans of Star Trek. The most popular is BronyCon, an annual conference, which reached peak attendance in 2015 with 10,001 attendees (BronyCon, 2019). In this setting, the language preferred online by this community transfers into spoken language. One can hear this linguistic variation in footage of the convention; in one video in particular by LittleshyFiM on YouTube, there are multiple instances of a "brohoof", and even attendees correcting each other when one person uses a non-Brony word where a Brony one is available (for example, correcting "bagpipe" to "lluviduphone", a term which makes reference to a specific episode of MLP). The latter illustrates norm-enforcement mechanisms in this group and lends credence to the idea that they are indeed speaking a variant of Standard English, which has its own norms. Further, the people in this video know each other, but only virtually. They are not from the same region and come together only for this event, yet their lexical entries are remarkably homogeneous, having been influenced by the community of practice. Even further, their address forms are their online profile names, which often do not reflect their given names. In these ways, we can truly see how technologically-based social media creates new specific communities of practice.

Another instance of an online community of practice is illustrated in Paolillo (1999). In this case, the setting is a global online chat platform, Internet Relay Chat (IRC), under the channel "#india", where members are united by their engagement and interest in this tag. This study is now twenty years old, and technology has much evolved since then, yet Paolillo's data illustrates strong communities of practice online, even towards the beginning of digital mass media. Paolillo analyzes the online linguistic interactions of the people in the "#india" channel to measure any correlation between network strength and non-standardized use of language, both English and Hindi, in the vein of Milroy & Milroy (1978). He found that there was no simple link between the two and argues that there are actually sub-groups within the channel which are partitioned primarily based on their core-ness, as measured by the number of operators (IRC moderators) in that subgroup.

One could expect that under the channel "#india", there would be a linguistic trend towards a unified form of Hindi, yet this is not the case. Instead, each sub-group follows different code-switching norms, and though the author does not explicitly state it, these sub-groups are moving away from the concept of social networks and towards that of communities of practice. The discourse data suggests that each sub-group, governed independently by its own vernacular rules, belongs to a different community, like Indian expats or nationals. This could intrinsically explain the inherent variation based on established linguistic patterns within these groups in spoken language, though the author does not capitalize on this. Indeed, through communities of practice, the variation can be more easily explained. Unknowingly, Paolillo illustrates how people group themselves based on common interest, even within another group, to develop their own linguistic norms and identity with no external influence (as the members of each sub-group do not know each other offline). Though these data were collected early in the age of the Internet, there is an emerging pattern: the idea of social networks as sociolinguistic units is one that has little to no standing in the digitized – and importantly, anonymous – world of today, where creating social ties is much harder. There are none of the classic norm enforcers, like knowing a

person's name, face, or occupation to govern their creation. All users know about each other are their usernames and the language they are using, and as such both become key players in defining identity online. Essentially, Paolillo exposes communities of practice who are incidentally defined by a geographical location, but may or may not be physically there.

In fact, regional linguistic variation has transferred into technologically-based mass media, allowing users to affirm this part of their identity and creating more variation in linguistic forms. Through the rise of social media and geotags, researchers are now able to track both the language employed, as well as the place the content was created in. Gonçalves and Sanchez (2016) mapped Spanish dialects through a corpus of 106 million tweets in Spanish, all geolocated, from 2010 to 2015. They identified 2 supra-dialects, a more popular, relatively homogeneous one used across the world in urban areas (A) and a heterogeneous one which is popular in more rural areas (B). The latter is divided geographically into four zones: Spain, North America, South America (general), and along the Andes. What is remarkable about the findings of the second supra-dialect are that they match the commonly drawn dialect boundaries for Spanish (Gonçalves and Sanchez, 2016: 70). This goes directly against the idea that online media is destroying linguistic diversity. Though Gonçalves and Sanchez argue that dialect A is a globalized form of Spanish, erasing the distinct regional character of cities because of overt prestige, they fail to recognize that the usage of dialect B may not represent a slowness to adopt dialect A in the rural regions, but rather an act of covert prestige. Using dialect B may be a conscious choice in preserving regional character and promoting it online as a way for people to mark their identity on the Internet, where other social cues, such as clothes, accent, and mannerisms, are lost.

This effect is not limited to Spanish and can be seen in English as well. For a folk example, "Scottish Twitter", a social media phenomenon, is the Scottish dialect of English transcribed as it would be spoken. By doing so, users of the variant are establishing their regional identity—and it is not simply a few people doing so, but a large community. A tweet by @sdel6795 (2018), a young man from Hamilton, Scotland, is representative of the variant:

> "Ma das just caught me running up the stair wae a couple of the good chocolate biscuits n he's complaining tae ma maw saying 'he thinks he's a major player in this hoose' Hahahaha"

It is clearly not Standard English spelling, and there are several components that differ from any standard form of English. Gonçalves and Sanchez (2016) saw that Spanish online varies based on the existing boundaries of existing regional dialects, and Scottish Twitter illustrates the same finding for English. The use of "biscuit" for "cookie", for example, clearly indicates the regional dialect as separate from North American English. Further, the usage of "ma" for "my", "hoose" for "house", and "tae" for "to", illustrates the phonetic difference in the dialect. In this tweet, the user highlights his spoken usage of a schwa in the word; he would not say (tu), but (tə), and to represent that, he changes the spelling to best (one assumes) represent his dialect.

Past this quick folk analysis of one tweet, there have been systematic studies of English on Twitter: Grieve (2018), which explores lexical innovation and diffusion on English Twitter, and Eisenstein & O'Connor, Smith, Xing (2014), which maps lexical tokens. Both studies make use of the geolocation of tweets, and gathered an enormous corpus—980 million and 170 million tweets respectively. They relate in depth the methodology of analyzing this enormous corpus and map lexical differences. Eisenstein's findings were that language online mirrors the existing

dialectal differences in American English. By tracking the use of "ion" (instead of "I don't") and "ard" (instead of "alright") among 3 other lexical tokens in American-generated tweets, they were able to not only reproduce existing dialectal boundaries (like "ard" being used only in Philadelphia and "ion" used in the South-East), but also found that race affects online language, much like it does spoken language. African American Vernacular has transferred to Twitter, and areas which are demographically similar are more likely to be linguistically similar. On social media, people are using language that, while written, still divides them into groups of existing English dialects—evidence of linguistic variation in digital mass media. These findings are reproduced in Grieve (2018). This study focuses more on the diffusion of new words on Twitter, finding that new tokens, like "bruh", meaning "bro", and "on fleek" do not originate online, but are diffused geographically through technologically-based mass media, following consistent diffusion patterns in which words will most often only be diffused in the dialectal region from which they emerge. Grieve identifies five regions in the United States within which new words can occur. Words will usually be restrained to that region, unless the word, such as in the case of "bae", meaning "significant other", gains extreme popularity. The five identified regions are the West Coast, from California to Arizona; the Deep South, centered around Atlanta; the Northeast, where New York is a hub; the Mid-Atlantic, around Washington D.C. and Baltimore; and the Gulf Coast, positioned in Louisiana and Texas. These are all dialect regions, with specific virtual manifestations. The author of this paper does not compare these proposed dialect boundaries with those from the Atlas of North American English (Labov, Ash & Boberg, 2006), which could have bolstered the claim. Indeed, the Mid-Atlantic and Northeast region match exactly with the finding from the Atlas (Labov, Ash & Boberg, 2006). It should be noted, however, that the regions do not align in the South: Grieve singles out the Gulf Coast as different from the rest of the South, whereas the Atlas considers it part of the General South. Yet, it must be understood that Grieve has only studied lexical entries and does not have access to phonological data, unlike the Atlas. Nonetheless, words diffuse regionally online like spoken language does; on social media, users are still able to differentiate themselves based on their language, promoting linguistic variation, especially lexically.

Though these last two studies do support the idea that technologically-based mass media is not responsible for establishing a homogeneous standard variety of English, they forget to account for an important subtlety that may have skewed their data. Neither consider the authenticity of the tweets themselves. Though the fraction may be small, it is important to account for the nuance that among the millions of tweets analyzed, the use of non-standard language is likely to, in some cases, not be an affirmation of identity, but rather something intended for comedic effect. By analogy, in sociolinguistic research of spoken AAVE, a white man who uses African American Vernacular English (AAVE) for a stand-up routine and not as his actual dialect would not be taken as an authentic speaker of AAVE, and therefore his speech would not be taken to be a true representation of the language. A study of language on the Internet should not treat this issue differently. There must be a certain amount of attention spent to this nuance, and it is one of the downfalls of having millions of data points. It would be extremely time-consuming to make this distinction for each tweet, but researchers could at least acknowledge that it could affect their results, which neither Grieve (2018) or Eisenstein & O'Connor, Smith, Xing (2014) do.

Contrastingly, Moll (2018) constantly asks whether or not their results are authentic in a thorough study of Jamaican Creole (JC) and its usage in web discussion forums. This is especially important for a language that has a history of being co-opted and reproduced in mass media, like in a 2013 Volkswagen commercial[2]. Moll (2018) finds that there is a conventionality in the non-standard orthography of JC in web-based media, much like Androutsopoulos (2000) remarked in the study of German punk zines, where orthography is systematically non-standard, through norms of covert prestige in specific communities of practice. Much like Androutsopoulos (2000), Moll (2018) identifies variables that are consistently realized as non-standard forms, but which have become the standard in JC forums. For example, (aw) is used to indicate the phoneme that would be /ɔ/ or /ɑ/ in Standard North American English, either word-finally or before a rhotic consonant, as in "lawd" (meaning "lord") and "naw" ("not"). This illustrates the difference between the creole and its lexifier, English: the creole only has 5 monophthongs, and there is no difference between /ɔ/ or /ɑ/ (Harry, 2006). Further, it also illustrates the non-rhoticity of JC mapped to written language. JC is governed on the Internet by community-chosen conventions, not by supranational entities (like the Académie Française for French) or language planning agencies. Social media have not forced speakers of JC to use another language to communicate online; in fact, they have created a platform for speakers to declare their identity in the faceless void of the Internet.

As has been demonstrated above, the Internet fosters linguistic variation by creating new communities of practice who develop their own linguistic forms and by providing platforms where regional variations and underrepresented languages can be written down and used as identity markers. Yet, there is a common negative opinion of web-based linguistic forms, wherein there is variety, yet these are appearing far too quickly and seem to supersede the standard. Squires (2010) argues that this is because society has gone through the process of enregisterment of "web" languages far faster than it does with spoken forms. Enregisterment is the mechanism by which new sets "of linguistic features conceived as distinctive, imbued with social meaning linked to social personae, and linked to what are perceived as distinct varieties of language" are acknowledged and accepted into the norms of a language (Squires, 2010: 3). It is the process by which the new features of online languages are internalized by speakers. Squires illustrates how, because digital forms are written, they are defined much more quickly as sub-standard variants of the norm because of the ease in comparing permanent forms of language to one another. Unfortunately, Squires assumes that any language on the Internet is a completely new sub-standard dialect, especially in English. However, that is not the case. As seen above, many regional forms written down online are forms that exist – and originate – in spoken language. Outside of mass media, they are not necessarily thought of as being rapidly changing or even degraded forms. It is then the medium in which the language is presented that alerts speakers' perception of a change, without them realizing that these changes are actually occurring simultaneously offline. The language used in mass media is oftentimes a non-standard form, which for the first time is appearing in written communication. These languages have existed for years, but it is the fact that these differences are presented on mass media that allows people to recognize them faster. There is no accelerated shift.

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[2] see Lopez & Heinrichs (2017) for the commodification of JC stereotypes in media

In this vein, Tagliamonte & Denis (2008) show that speech generated by online communication is actually more conservative than what is spoken. In a study of teenagers in Toronto, Tagliamonte tracked speech through instant messaging (IM). The results show that in all four grammatical variables analyzed in the study (intensifiers, quotative systems, future temporal reference, and modals of necessity), compared to results of Tagliamonte's past research into their spoken forms (Tagliamonte, 2008; Tagliamonte & D'arcy, 2004a; Tagliamonte & D'arcy, 2007b; Tagliamonte, 2007), the English used in IM was more conservative, varied, and standardized than what the teenagers would actually produce in speech. Tagliamonte's study is important in highlighting that indeed, through technology, language change towards homogenization has not been sped up, but variation has actually been preserved. By studying young adults who are already friends and belonging, one can imagine, to the same social groups and from the same region, Tagliamonte does not have to account for differences in online language created by the need to linguistically reinforce identity. Yet, herein lies one of the weaknesses of the study as well, where the results represent only the online language of one community of practice, in one dialect region. Further, it only considers private communication between a small group of people, so it cannot readily apply to all Internet-based communication, such as social media, which is more formal due to its public nature. Still, the core results remain stable: language online is a representation of what is actually spoken and it may, in effect, be more conservative. The pervasive idea that technologically-based mass media is swiftly homogenizing language is but a reaction to the rapid enregisterment of web languages, as put forth by Squires (2010).

There is no one dialect that will supersede all others and erase any kind of linguistic variation in technologically-based mass media. The Internet allows people who do not live close to one another to form virtual communities of practice, which increase linguistic variation. It prompts speakers of non-standard forms of languages to assert their linguistic diversity through non-standard orthography and lexical terms, which can be shown to follow pre-existing dialect boundaries. Further, language is not changing faster than it ever has, though it is changing. It is simply the novelty of the medium which causes people to notice the change. Language is an identity marker, whether online or offline. Yet in technologically-based mass media, the way one communicates takes a much bigger role, for there is not much else by which someone can define themselves. The new forms of mass media which have appeared in the last two decades have allowed people to communicate faster and better than ever before without being forced to compromise their specific linguistic identity through standardized writing forms. Though technology has led to globalization on many scales, language seems to not be one of them.

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Intonation Patterns of Korean Second Language Learners of English

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Abstract

Intonation is an important property when analyzing speech and is one of those properties of speech by which it is easy to distinguish bilinguals from monolinguals. Taking into account the different stress patterns of various languages, we chose to study Korean and English, since Korean is a syllable-timed language and English is a stress-timed language. Significant research has been done on similar research questions by Ulrike Gut, who studied intonation acquisition of German-English bilingual children, and Danica MacDonald, who studied Koreans' acquisition of English question intonation. Our goal was to answer broader questions about bilingualism, and how it affects the acquisition of intonation. Via Skype, we recorded our participants reading a pre-written English paragraph and plotted the pitch and intensity of three different phrases (a declaration, a question, and an exclamation) using the speech analysis software Praat. Our results generally showed that the intonation patterns of a speaker's first language affect those of their second language, but overall our study was inconclusive since the COVID-19 pandemic did not lend itself well to gathering all the data we might have needed to come to more confident conclusions.

1 Introduction and Background

Intonation is an important property when analyzing speech because it can convey both powerful and subtle variations in a speaker's intentions and meanings; former British Prime Minister Margaret Thatcher was even advised on how to use intonation to appear more authoritative (Gussenhoven 2002: 6). It also proves to be challenging for many learners of English, especially when their first or dominant language has contrastive intonation, like Mandarin. In addition, transfer occurs when a bilingual's native language has different non-contrastive intonation patterns from English. Although it does not determine grammaticality, intonation is one of those properties of speech by which it is easy to distinguish bilinguals from monolinguals. For this reason, intonation has become the subject of a myriad of articles and books and has become a topic of interest for those who study bilingualism.

In 1999, Ulrike Gut studied the acquisition of intonation by German-English bilingual children. For example, Gut studied the productions of Laura, a German-English bilingual with L2 English and limited English input (Gut 2000: 62). He found that this participant's phonetic use of English pitch accents at age 4;3 were "highly variable and [did] not show any systematic tendencies" (Gut 2000: 134). Another child, a simultaneous bilingual, seemed to have "separate systems for his two languages" (Gut 2000: 145). Several of Gut's other participants yielded inconclusive results (Gut 2000: 127). He concluded that pitch was acquired fairly early for most children, but intonational phrasing was not (Gut 2000: 164). Furthermore, there was some evidence of cross-linguistic variation in the production of pitch accents (Gut 2000: 166). Gut also wrote that there was a "lamentable" (Gut 2000: 2) lack of research on sentence-level intonation, which is an important aspect of language acquisition, especially when it carries nuances of meaning in the spoken language (Gut 2000: 4).
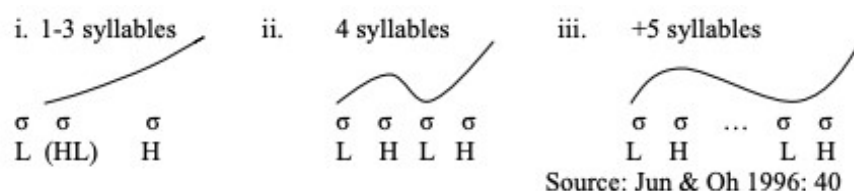
Danica MacDonald from the University of Calgary also picks up on the shortage of research on L2 acquisition of prosody, specifically intonation. She studied Koreans' acquisition of English question intonations and found that the L1 (Korean) intonation patterns of her participants affected their productions in L2, although there seems to be "improvement with greater exposure" (MacDonald 2011: 14). Additionally, her more advanced learners were able to apply the correct intonation patterns in English (MacDonald 2011: 14). Her subjects were all adults between age 20 and 30 and ranged from beginner to advanced (MacDonald 2011: 8).

MacDonald was only studying the bilinguals' question formations, comparing intonation patterns of wh- questions with yes/no questions. We wished to consider a wider range of sentences and see if this would affect results. In this project, we seek to determine whether adult Korean-English bilinguals who are dominant in Korean would exhibit crosslinguistic influence of intonation patterns in their English productions. We hypothesize that transfer will occur, and that our bilingual participants will produce discernible differences as compared with a native English speaker. Because this linguistic property can vary considerably between dialects, we will focus on the standard Canadian "Montreal" English.

2 Linguistic Property

Gut defines intonation with three primary linguistic functions: "nucleus placement, nuclear tone, [and] intonational phrasing"(Gut 2000: 3). The nucleus is defined as the central part of the syllable, and its placement varies cross-linguistically. Thus, intonation is dependent on how the listed aspects of the nucleus vary. Tone refers to the pitch movement on a stressed syllable, mainly in the nucleus (Gut 2000: 4). Tone can be simple or complex within one nucleus (i.e. they can rise and/or fall and/or remain level) (Gut 2000: 5). Pitch accents, or voicing, can be analyzed on a scale from High to Low (Gut 2000: 9). Combined is an analysis of tone with respect to loudness, length, pitch, and pauses (Gut 2000: 13) within phrases and sentences. In English, intonation can be used to mark focus (Gut 2000: 11) or questions (Gut 2000: 12). It also carries semantic meaning, as described in Gussenhoven's article "Intonation and Interpretation: Phonetics and Phonology". As an example, Gussenhoven provides a graph of perceived friendliness as a function of pitch, comparing Dutch and English; emotions can be communicated through intonation (Gussenhoven 2002: 6). Furthermore, proverbs can often require certain intonation patterns to carry more than just a literal meaning (Gussenhoven 2002: 6).

According to MacDonald, a key difference between English and Korean intonation systems is that Korean intonation only marks Accentual and Intonational Phrases, whereas English also shows Pitch Accents and Phonological Phrases (MacDonald 2011: 4). An accentual phrase is a prosodic unit which is immediately higher than a word, and it is defined by its intonational markers. An intonational phrase is a section of speech which has its own intonation pattern, and a phonological phrase is what syntax classifies as "XP"s, such as noun phrases, adjectival phrases, or verb phrases. Pitch accent is the one syllable in a word or morpheme which is more prominent than the others. In the Seoul dialect, the typical tonal pattern of the accentual phrase is Low-High-Low-High, based on the syllables (characters in the written language) in the phrase (MacDonald 2011: 3). Unlike in English, the tones can also differ based on word length in order to fit the LHLH pattern used for an Accentual Phrase, unless the initial syllable is aspirated. Macdonald includes on page 3 of her article the following graphs from Jun and Oh's article:

i. 1-3 syllables   ii.   4 syllables   iii.   +5 syllables

σ σ σ   σ σ σ σ   σ σ ... σ σ
L (HL) H   L H L H   L H   L H

Source: Jun & Oh 1996: 40

Jun and Oh also provide a useful model comparing English and Korean intonation (Jun, Oh 2000: 1).

Furthermore, in terms of phonological stress, Korean is a syllable-timed language, which means that every syllable takes up about the same amount of time, and the actual length of time depends on the prosody. On the other hand, English is a stress-timed language which means that syllables may last different amounts of time, but there is a decently constant amount of time between consecutive stressed syllables. Korean intonation rises and falls abruptly based on syllables, so it sounds almost like a staircase, and English appears to rise and fall more fluidly

like waves. So, Korean-English sequential bilinguals might "apply" Korean intonation patterns to English syllables.

3 Method

Our first Korean-English participant from Seoul, *M*, is a 21-year-old woman who was educated in a traditional Korean school until Grade 4, when she attended a Korean international school until Grade 9. After that, she attended a typical Korean high school. She learned English starting in Grade 1 from a private English institute where she learned the alphabet and the basics of the language. She has been living in Canada since December 2019. Our second Korean-English participant, *W* (*M*'s brother), is a 31-year-old man who was first educated in Germany (from ages 5-8), and then went to a traditional Korean school from ages 8-20. He attended his first year of university in Korea and then spent one year in the military. After this, he came to Montreal, where he has been living for the last 7 years. He learned English from the Korean curriculum starting at age 10, but only started using English at age 24 upon arrival in Canada. Our third participant, S, is a 21-year-old woman from Montreal who is a French-English bilingual. A native English speaker, she was educated at a French immersion elementary school, learning French starting in Grade 1. She then attended an English high school, CEGEP, and university, and uses English almost exclusively at home and at work. Although *S* is not an English monolingual, she is dominant in English. Her English is perhaps better representative of the speech of Montreal anglophones than an English monolingual's would be, considering that most of them are French-English bilinguals.

To collect the data, we called our participants via Skype and recorded their responses. In order to test their intonation patterns, we gave them a passage of text to read, which contained varied phrases, including direct and indirect questions, as well as exclamatory and declarative sentences. For example, "I can understand why people make jewellery out of these beautiful things they find on the shore" serves as a test for how the participants would interpret an indirect question. By reading a paragraph out loud which they had neither seen nor heard before, the participants were required to apply the intonation pattern which was most natural to them to the provided sentences. Thus, the exercise tested their intonation patterns while reading English. The recordings were then inputted into speech analysis software, so that we could compare the data between participants.

4 Results

Following are graphs constructed using the sound editing software Praat, which show a couple components of intonation that are quantifiable: pitch and intensity (or loudness).
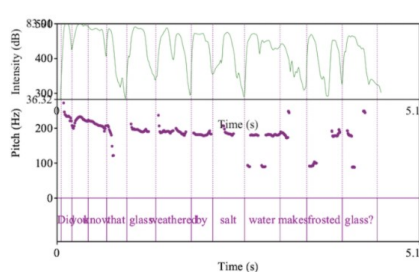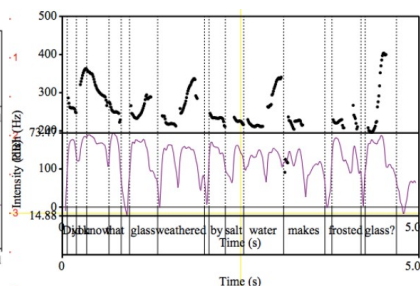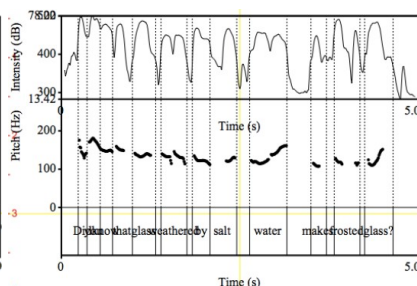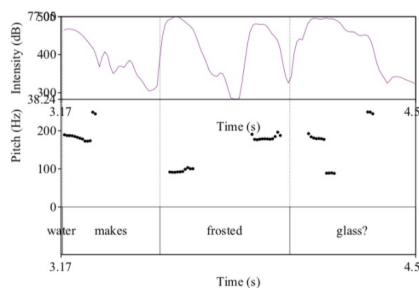
Figure 1: *S* Question

Figure 2: *M* Question


Figure 3: *W* Question

Figure 4: *S* Question
Magnified
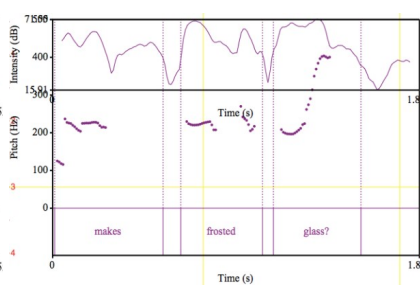
Figure 5: *M* Question
Magnified
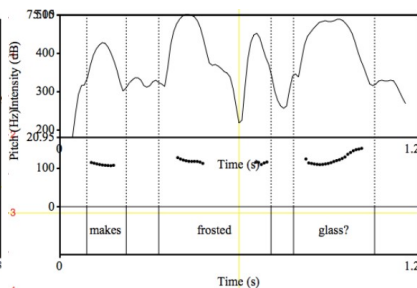
**Figure 6:** *W* Question
Magnified

Figures 1 to 3 depict the question "Did you know that glass weathered by salt water makes frosted glass?" from our test paragraph. For native English speaker S, it shows the pitch mapped in purple and the intensity in green. Korean-English bilingual *M'* s questions are displayed along with the intensity (plotted in a purple solid line) and pitch (plotted as black and purple dotted lines here) of the production, and *W's* is all in black. The same question was analyzed for all three participants for comparison purposes. Figures 4 to 6 are zoomed-in versions of the end of the question, showing this phenomenon. By observing this version, we can also see the intensity, or loudness, more clearly than in Figure 1. In this question, we can see that the English native-speaker's pitch is higher at the beginning of the question at around 250 Hz and then lowers to around 200 Hz for mostly the rest of the question. However, the pitch jumps back up at the end to about 275 Hz, which demonstrates the characteristic intonation of questions in English. The intensity seems to display a negative correlation with respect to the pitch, which is typical; as the pitch rises to indicate a question, the loudness lowers. For the bilinguals, we can also see another factor of intonation at work here: pauses. Pauses indicate natural breaks between words in an utterance, but sometimes they also show hesitation. As we can see in Figure 2, there is a noticeable pause after the word "that" in our sample question. Also, the pitch raises at non-target-like moments throughout this utterance, for example during the words "weathered" and "water". As we can see in Figure 5, her pitch raises drastically, while the loudness of the utterance lowers as a result. When comparing this to *S'* s productions above, the intensity and pitch present similarly, but one difference is that our English native speaker's intensity dropped a bit later than our Korean/English bilingual's; *M'* s loudness dropped at about halfway through the word "glass?", as we can see in Figure 5 above. As we can see in Figure 3, an interesting thing to note about *W's* question production is the rising pitch not only at the end of the question, but also during the word "water".
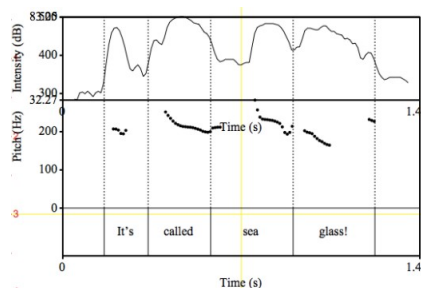
Figure 7: *S* Exclamatory
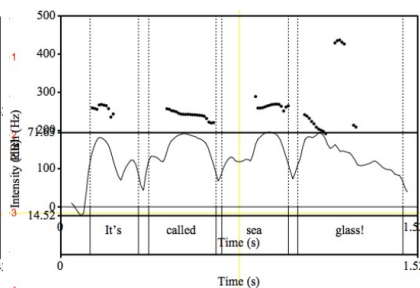

Figure 8: *M* Exclamatory
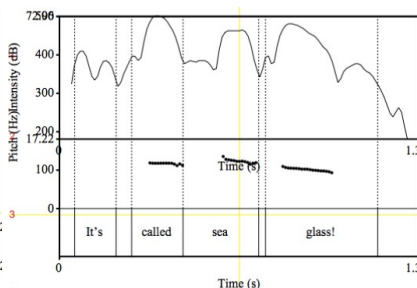

Figure 9: *W* Exclamatory

Figures 7 to 9 present the same intensity (plotted with a solid black line) and pitch (plotted with dotted lines) analysis as above, but this time it was done on an exclamation: "It's called sea glass!" For S, in Figure 7, the intensity remains at around 80 dB when the speaker produces a word and drops when there is a silence. It does not show any drastic differences between the question and the exclamation. As in the question, this speaker's pitch is higher at the end of the production, but we can also see that it is consistently higher throughout the exclamation than in the question. Figure 8 above shows that *M'* s pitch remains relatively low (around 250 Hz) throughout the exclamation and raises significantly (up to ≈450 Hz) at the very end of the utterance. This is very similar to *S's* production, but *M'* s pitch level jumped more noticeably during the very last word in the production. The intensity also remains consistent throughout the exclamation (similarly to *S's* exclamation intensity in Figure 7), but in comparing the graphs, I noticed that *M'* s intensity dropped more sharply. Otherwise, the data appear to be very similar. *W's* exclamation shown in Figure 9, when compared with the other two speakers, does not contain the raised pitch at the end, but rather presents more like a statement.
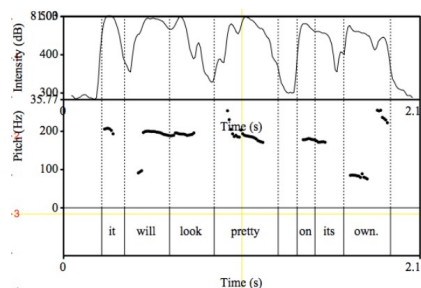
Figure 10: *S* Declarative Statement
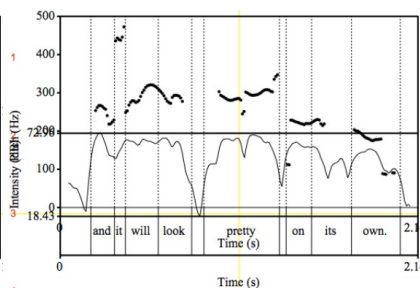
Figure 11: *M* Declarative Statement
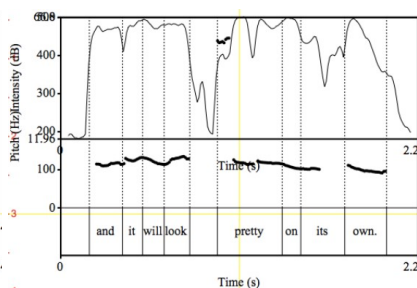
Figure 12: *W* Declarative Statement

Our last example, shown in Figures 10 to 12 takes the form of a statement from the Sample paragraph: "...it will look pretty on its own." As we can see in Figure 10, when compared with the question and the exclamation, the intensity at the end of the native speaker's statement remains consistent with the rest of her production; it does not drop significantly. Also, the pitch in this statement is much lower at the end of the production than it was in either the question or the exclamation and demonstrates the falling intonation characteristic of statements in English. For *M'* s productions shown in Figure 10, there was also a noticeable drop in pitch at the end of the statement, which again is the norm for English statements (Gussenhoven 2002: 1). And finally, as we can see from Figure 11, *W* pauses before saying the word "pretty", but otherwise his

production is similar to *S'*s. It is interesting to note that *M* also had this pause before the word "pretty", but *S* did not.

5 Discussion and Conclusions

Our results suggest that the bilingual speakers were slightly less confident when compared with the native English speaker. This could explain the pauses and apparent hesitancy in their productions; perhaps the phonology or syntax of those parts of the sentences were more difficult to them, such as subordinate clauses. Their occasional non target-like uses of pitch and intensity in their speech, such as with the word "water" may be instances of L1 intonation affecting L2 intonation, and that they are imposing Korean Low-High-Low-High Accentual Phrasing on the English sentence. Transfer of this property of their L1 might explain *M'* s tendency, especially in the questions, to raise pitch more often than *S* did. It is difficult to tell, however, as the bilinguals' productions do not consistently follow the L1 pattern, or even differ from the L2 patterns in the same ways. *M* also seems to exaggerate intonation in some places (see Figure 2), as compared with the native speaker of English. In contrast to this, *W* seems to tone down the intonation, most easily seen in the exclamatory statement shown in Figure 9. Both cases could either be the result of a lack of confidence or simply stylistic preferences. *S'*s productions seemed to be in a sort of median between the two. That said, the overall results between participants were mostly consistent, especially in the question examined. Both of our bilingual participants would be considered to be advanced L2 learners, and this might explain how similar the results were. Our results are also consistent with MacDonald's findings, as the productions of her advanced English learners were mostly target-like. However, whether from hesitancy or transfer, the bilinguals' speeches seem at some points to be distinguishable from a native English speaker, which again demonstrates how intonation is difficult to master even for advanced learners like *M* and *W* and can result in hesitancy and lack of confidence.

Studying intonation patterns on a comparative basis is difficult for several reasons. Firstly, besides the obvious geographical factors, English intonation varies from individual to individual based on their habits and general speech patterns. Furthermore, intonation is also interpretive because it imposes its own semantic interpretation on the text; when people are tasked with reading a written text, they must interpret whatever semantic information exists which is conveyed through intonation. This can lead to several different intonation patterns being considered correct, even if they were different from that of a native English speaker. It is also difficult to elicit speech patterns which would be natural to the participants, because they were not the writers of the text. In addition, the participants have no emotional connection to the words, which Gussenhoven's studies revealed to be conveyed partially through intonation. Ideally, more productions and more participants would be included in this study so that comparisons could surpass individual and semantic differences. However, given the current situation, finding more participants was not feasible. Thankfully, the way that we interpreted our data with the Pratt software lent itself well to collecting an audio file virtually, apart from internet connection issues. Even still, due to the constraints on the scope of the study, our results are inconclusive and further research should be conducted to gain a better understanding of L2 acquisition of intonation for Korean-English bilinguals.

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Appendix

Full Test Paragraph:

Did you know that glass weathered by salt water makes frosted glass? It's called "sea glass"! The pieces usually look like smooth, brightly-coloured rocks and might even have letters or decorations on them. Have you seen it on the beach by our house? I walked down there yesterday to see if I could find some, and I did! Look at how it sparkles in the light. You can see how many different colours I found: purple, blue, green, and even black! I can understand why people make jewellery out of these beautiful things they find on the shore, and why others purchase their creations, even at such steep prices. To be fair, it takes a lot of work to make such masterpieces! The artists have to drill holes in the hardened glass and twist wires to create chains for the glass to hang from, so it is a very labour-intensive process. But I'll just put the sea glass that I found into a glass jar, and it will look pretty on its own.

Ethnicity and North American English: An Investigation into the Role of Heritage Language on Asian American English

Michelle Yang

Abstract

It is clear that ethnicity can play a role in language variation – this is a relationship that has long interested modern sociolinguists. This paper investigates a lesser-studied ethnic group, Asian Americans, for the potential identification of an Asian American ethnolect, specifically through the lens of heritage language and ethnicity. Approached through a literature review, this paper strives to identify key linguistic markers that appear in different studies. 5 key pieces of research in this area were identified and reviewed and it was found that there are some markers that appear across multiple studies as identifiers of Asian American speech. While none of the studies reach a definitive conclusion, all show the potential and need for further research. This paper emphasizes the need to consider racial identity as a variable when considering group belonging and ethnolects.

In the past, many sociolinguistic studies have investigated ethnicity as a variable for linguistic variation. Labov's 1972 *Language in the Inner City* looked at features of African American Vernacular English, while Wolfram & Walter A. (1969) studied African American English in Detroit. The linguistic features of other varieties of North American English, such as AAVE, are well documented and have been studied by other linguists as well. However, research on the speech of Asian American English is lacking in comparison (Hanna, 1997). This paper investigates five different articles about the identification of an Asian American English and seeks to explore the role of heritage language and ethnicity on native English speakers, with the goal of evaluating the hypothesis of whether it can be argued that an Asian American ethnolect exists.

For the purposes of the paper, "Asian American" refers to those of East Asian descent, though the term has a much broader scope in reality. Asian languages, with an emphasis on Chinese, are chosen as the focal point of this paper for two reasons: the ethnicity of the author and the linguistic differences between English and many Asian languages. The author herself is Chinese Canadian, with English as her dominant language. Moreover, a common hypothesis among Asian Americans/Canadians in her peer group is that it is possible to identify other Asian Americans/Canadians based on speech alone; similarly, this hypothesis is a motivating factor of two of the papers investigated – Hanna 1997 and Newman & Wu 2011. Furthermore, English and Chinese differ in linguistic elements such as stress, intonation and tone, consonants, voicing, clusters, vowels, segmentals, suprasegmentals, and more. As such, Asian languages are ideal for investigating potential substrate transfer and contact effects between the heritage language and community language.

Historically, Asian American English has been less thoroughly explored. This could be partly due to the shorter history of Asian American groups in North America. Other ethnic groups with longer histories in North America, however, have been investigated by sociolinguists, such as African Americans/Canadians and Italian Americans/Canadians. Asian American immigration to the United States and Canada only began in 1850 (Library of Congress, UBC Library). Afterwards, there was increasing anti-Asian sentiment, resulting in the head-tax and Chinese Immigration Act in Canada, the Chinese Exclusion Act of 1882 in the United States, and various other policies from Canada and the U.S. to stop immigration from all Asian countries (UBC Library, US Department of State). It is only as recent as 1947 in Canada and 1965 in the U.S. that East Asians have been able to freely immigrate. Furthermore, it is possible that Asian American English, specifically that of East Asians, has not been investigated due to the "model minority" myth. Part of this myth assumes that East Asians assimilate into the social and residential areas of society in order to achieve the "smart and successful" framing (Junn, Masuoka, 2008), so it is possible that linguists assumed there would be language assimilation as well. Additionally, since Asian Americans benefit from the positive framing of the model minority myth, there may be less motivation to form group racial identity as compared to other ethnicities (Junn, Masuoka, 2008). Yet at the same time, Asian Americans suffer from the "forever foreigner" syndrome (Junn, Masuoka, 2008) and East Asians are consistently seen as the "yellow peril". Both terms perpetuate a stereotype that Asians are untrustworthy and, plagued by their otherness, present an existential threat to the western world. As such, despite Asian Americans being more privileged than other minority groups in North America, it is clear that they are still

seen as their own distinctive group. As a result, there may be a desire to signal group belonging, which provides a sufficient environment for an ethnolect to develop.

Hoffman and Walker's 2010 paper "Ethnolects and the city: Ethnic orientation and linguistic variation in Toronto English" focuses on investigating the ethnic dimension of sociolinguistic variation in Canadian English. Their goal was to "identify linguistic features associated with the English of different ethnic groups in Toronto and the way in which such features are used". The data set included 60 informants of Italian and Chinese heritage, sorted by generation and sex, with a group of 20 Torontonians from the founder-population ethnicities serving as the control. Additionally, Hoffman & Walker use Ethnic Orientation (EO), which measures '*degree of ethnicity*', as a variable in their data collection, hypothesizing that those with higher degrees of EO will show linguistic contrasts with those who have lower EO. Accordingly, they found that the EO scores for all first-generation speakers were higher than the second and third-generation speakers of the heritage language. Furthermore, Hoffman and Walker examined two linguistic variables: (t/d)-deletion in word-final consonant clusters (TD) and the Canadian Vowel Shift (CVS). For TD, it was found that all Chinese informants delete t/d more frequently compared to the control group, and that first-generation Chinese do not share the same system of TD with the control. When investigating the Canadian Vowel Shift, first-generation Chinese showed no participation in CVS. Second and third-generation Chinese with a high EO participated in the CVS to a low extent, while those with a low EO participated in the CVS to a higher extent (although this was significantly lower than the control group). Hoffman and Walker found that even though EO does seem to influence linguistic variation, it is not straightforward. Despite finding that high and low EO speakers exhibit slight differences in the preceding segment for TD, there could be other factors that could account for this, and for the CVS there are group disparities.

By taking a subjective approach to ethnicity, Hoffman and Walker set out to investigate the role of ethnicity in linguistic variation. Acknowledging that ethnic identity cannot be shared equally by all members introduces another social variable that may influence linguistic variation, allowing for a more nuanced interpretation of data. Moreover, since Hoffman and Walker's 2011 paper investigates ethnic identity, the use of community members as interviewers puts interviewees at ease when discussing certain aspects of ethnic identity. However, enclave status and the CVS is determined impressionistically in this study, which raises concerns of subjectivity. It is unclear if authors reached a consensus on enclave status before assigning each interviewee a high or low EO status, nor is it clear how enclave status is initially determined. Furthermore, Hoffman and Walker look at sex as a social factor contributing to TD and the CVS, but in the context of this paper it would have been beneficial to divide ethnic group and EO status by sex to investigate if there was a difference between women and men within each subcategory. This would perhaps aid the paper in avoiding overgeneralization of ethnicity orientation results. In addition, the Chinese informants in this paper were referred to as speakers of Chinese; however, Chinese is an imprecise term as there are many dialects of Chinese spoken in China (Kurpaska, 2010). It seems probable that the Chinese informants' heritage language is Cantonese as the study was restricted to those who were born in or could trace ancestry to Hong Kong or Guangdong province where Cantonese is the main dialect (Cantonese Profile, UCLA), yet this is never clarified. It would have been relevant to a paper studying Asian American linguistic markers to

specify the dialect, as there are varying attitudes towards the Cantonese dialect in Hong Kong and the official national dialect, Mandarin (Mee, 2011). Potentially, these attitudes towards the Chinese dialects could affect the EO of speakers. However, when considering the scope of the research question, Hoffman & Walker did have sufficient evidence to support their initial hypothesis "that speakers with higher degrees of EO would differ linguistically from speakers with lower degrees of EO".

Wong 2007, "Two Vernacular Features in the English of Four American Born Chinese", tracks the use of vernacular features [ɔ]-raising and [æ]-tensing in New York City English among American Born Chinese in New York City as linguistic markers of group affiliation and identity. Wong hypothesized that since these linguistic variables are closely associated with group belonging in NYC, other ethnic groups may adopt these variables as a way of mainstream identification. Wong found that informants showed the caught/cot distinction. Furthermore, height distinction in [æ]-tensing is not exhibited; however, variable rates of the use of [æ] were found among the speakers. Wong proposed that social categories such as age, occupation, and education do not distinguish the speakers, rather their social networks do. An investigation was conducted into Chinese dominant and non-Chinese dominant networks, which were then correlated with Chinese and American lifestyles. As a result of this categorization, Wong found that those who have non-Chinese dominant networks and an affinity for an American lifestyle favour the high [ɔ] and show a more polarized fronting distinction in [æ]. Those with Chinese dominant networks and a Chinese lifestyle disfavour the use of high [ɔ] and make no fronting distinction in [æ]. As such, Wong concludes that raised [ɔ] and tensed [æ] "enable informants to negotiate and index their positions within a complex system of distinctions and identity constructions" (228).

Raised [ɔ] and tensed [æ] are linguistic features of NYCE studied by Labov in 1966, revealing that they have strong associations with New York's Italian and Jewish ethnic groups, which allows Wong to compare her findings with previous data and support her hypothesis. The sociolinguistic interviews consisted of conversation reading passages, and a wordlist. The format is similar to Labov's sociolinguistic interview, but the formal style makes it unclear if the vernacular is reached. This issue is addressed in section 5.1 of the paper, where Wong found that style is not a significant factor in [ɔ]-raising – unlike previous studies. Wong states that this may be due to the formality of the interview style and the reading passage. As such, the results may not reflect the speech of the informants, thus altering the accuracy of the results. When evaluating social networks and lifestyles, Wong assigned the informants an American and a Chinese lifestyle rating based on their responses to the lifestyle questionnaire. However, this is a subjective measure, based on the author's own interpretation of an American versus a Chinese lifestyle. Moreover, as the lifestyle questionnaire is not provided in the paper, it is difficult to evaluate if the questions were biased, how the informants answered, or even how scores were assigned to each answer. Additionally, a score of difference was assigned to each informant by subtracting the Chinese lifestyle score from the American lifestyle score. Although this score of difference serves its purpose in the paper, it also linearizes and simplifies lifestyle, which disregards the nuances of lifestyle and ethnicity for an informant, an issue that is later acknowledged by the author. As such, it would have been interesting for the author to look at the phonetic features studied on a continuum of Chinese and American lifestyle.

In an examination of perceptions of Asian American speech, David B. Hanna's 1997 paper "Do I sound 'Asian' to you?: Linguistic markers of Asian American Identity" sets out to determine whether the speech of second-generation Asian Americans are distinguishable from the speech of the majority. He introduces the hypothesis that people can distinguish between Asian Americans and Caucasian Americans by certain linguistic features and aims to explore what these features are. Using Labov's family background test (Labov, 1994, cited in Hanna, 1997), Hanna measures judges' sensitivity to linguistic markers of ethnicity. He uses speech samples from 12 second-generation Asian Americans and 8 Caucasian Americans; both speech sample sets were divided evenly by sex. Then, 60 judges (30 Asian American and 30 Caucasian American) made judgements about the ethnicity of the speakers. Hanna found that the Asian American judges correctly guessed 67% of the time, and that the Caucasian Americans were successful 63% of the time. Using statistical analysis, it was determined that both groups of judges have a higher success rate than random guessing, thus supporting the initial hypothesis. Many Asian American judges noticed a high rising pitch movement at the end of statements in Asian American speech. This intonational contour is found in both speech samples by Asian Americans in the study. Hanna proposes the hypothesis that Asian Americans may be using this intonational contour at a higher rate than other ethnic backgrounds, which makes it an ideal candidate for a developing Asian American suprasegmental feature that can be used to identify ethnic background. Furthermore, participants reported that Asian American speech sounded "jerkier" and had more pauses between words – another potential suprasegmental feature that could define Asian American speech.

The participants in Hanna's study were high school students approached at the end of their school day and interviewed about random topics to collect a sample of data. However, there is a possibility that the vernacular speech was not collected due to the nature of the interviews. It cannot be guaranteed that the students used their most "natural voice" (Hanna, 1997) when approached by an unknown adult after school hours. Moreover, it is unclear if all speech samples produced had the same phonological features, which would affect how judges distinguish between Asian American speakers and Caucasian American speakers. Additionally, the judges were all members of the University of Pennsylvania, which the author states has a high percentage of Asian Americans, and this exposure may have increased the white judges' sensitivity to linguistic contrasts. An expansion on this paper could have white judges, who do not normally interact with Asian Americans, distinguish between Asian Americans and white Americans to test if the linguistic contrasts are salient enough to hear a difference. The data collected in this paper supports the initial hypothesis that some Asian Americans have identifying linguistic features, thus serving as the starting point for more work in the identification of a unique Asian American English. Hanna establishes that if there exists something different in Asian American speech from the community language, there are two possibilities: the retention of certain features from the heritage language for many generations before assimilation or the creation of distinct new ethnolects like in AAVE.

Michael Newman and Angela Wu's 2011 paper "'Do you sound Asian when you speak English?' Racial identification and voice in Chinese and Korean Americans' English" attempts to identify an Asian American English by exploring three questions: 'How able are judges of different backgrounds to discern speakers of Asian background compared to those who index

other racialized groups?', 'Are these judges able to distinguish Korean from Chinese Americans?', and 'Can any phonetic cues be identified as potentially indexing Asian identity?'. In an identification study, Newman & Wu used speech data from a sixty-word passage and asked judges to identify the ethnic background of the speakers. The results showed that there were many misidentifications of the Asian Americans; yet simultaneously all the Asian Americans received more identification as Asian when compared to the other ethnic groups. To answer the second research question, evidence for identifying the difference between the speech of Korean Americans versus the speech of Chinese Americans is weak. As a result, the data points to a degree of sensitivity to sounds associated with Asian American identity, but little sensitivity to internal Asian American difference. Additionally, a sociophonetic study of certain suprasegmental linguistic features found no evidence for any role of jitter or shimmer (the frequency instability and the amplitude instability of the sound wave, respectively), but that phonation type differed between Asians and non-Asians. Rhythm was not found to be a linguistic feature that differentiated Asians from other groups, but there is greater syllable timing for Chinese Americans. Whereas VOT scores and /ɛ/ seem to be at the ranges of the non-Asian speakers, prevocalic /r/ seems to be differentiated, with low realizations by Asian speakers. Interestingly, Newman & Wu found that no Asian American speaker presents all linguistic markers of ethnic identity, yet none lack all, and this combination of linguistic features provides empirical support for "sounding Asian".

For the speech samples, Newman & Wu included speakers from outside the Asian American and European American community, which allowed judges to choose from more options. The variety of options reduced the potential of judges guessing the correct option. Furthermore, all speakers read a sixty-word text for the speech samples, which allowed for a universal data set that overcomes differences in phonological environments that may alter the speech produced. However, the reading task does not elicit vernacular speech, which affects the use of standard and non-standard varieties of English – an effect that is documented in earlier studies (Labov 1966). As the goal of Newman & Wu's paper is to find linguistic features of Asian American English that set it apart from European English, the formal speech style may have impeded the identification of these features as the speakers may have felt compelled to alter their speech patterns. A strength of the methodology used for the judges is that data from the judges were collected online, where the judges could reply at home. As such, no researcher was present at any point of the data collection. This could make judges more comfortable as they respond and less likely to doubt their own responses, as there is no researcher who would know the "correct" answer. Newman & Wu present the difference in Asian American speech by analyzing phonetic features and suprasegmental features, ultimately succeeding in their goal of identifying phonetic cues indexing Asian identity. However, they do not account for these differences as a result of substrate transfer or otherwise. In the future, an interesting direction for this paper would be to find trace features of the heritage languages studied in the English of Asian Americans.

Chapter 5 of Lauren Hall-Lew's 2009 PhD dissertation "Ethnicity and Phonetic Variation in a San Francisco Neighborhood" investigates back vowel fronting in the residents of the Sunset District of San Francisco, California. Hall-Lew proposed that younger speakers of Sunset District will front the GOOSE and GOAT vowels further than older speakers. Moreover, she hypothesized that if non-White speakers avoid or are late in the adoption of White-led changes,

then there should be more fronted projections of back vowels by European Americans when compared to Asian Americans, which could be a marker of linguistic ethnic identity. Hall-Lew found that for vowels of the GOAT class, speaker age is the strongest social predictor of variance and that Asian Americans reflect the broader pattern of GOAT fronting. For TOO, Hall-Lew found it correlates significantly with speaker age for women and not for men, but unlike GOAT there is no interaction between age and ethnicity. When investigating COOP, the range of fronting patterns is larger for COOP than TOO. Furthermore, speaker age was not a predictor for production, and the greater variability in COOP suggests that patterns for COOP are less stable. GOAT-GOOSE fronting correlates with speaker age, and correlations with class and ethnicity were not found; thus Hall-Lew found that Asian Americans are not behind European Americans in back vowel fronting. It was also found that there is no statistical difference between ethnic groups, though Asian Americans front GOAT more. Hall-Lew's data challenges claims that non-Whites avoid local sound change, as proposed initially in the hypothesis.

By analyzing individual sound segments with certain phonological features of interest, Hall-Lew was able to find correlations between social factors such as age, sex, and ethnicity with certain vowels. The strength of this paper lies in its nuanced interpretations of the results, where each social factor was interpreted against the other. This allows for all correlations to be investigated, which eliminates a possible misinterpretation of results. For example, a correlation with age was further investigated as age among Asian Americans, European Americans, females, and men. As such, though there was significant correlation with age and the linguistic variable studied, it was found that among men there was no significance. Thus, the interpretation of results is well-rounded. Moreover, Hall-Lew accounts for influences from other languages where she states that heritage languages may inhibit fronting, a consideration that sets this paper apart from the rest. However, this paper only looks at linguistic variables individually, not within the context of the sentence. As such, only phonological analysis could be performed. This is problematic because a speaker testimony in Chapter 3 (3.3 *Neighborhoods & Ethnicity*) revealed that a speaker thought that a Chinese heritage native English speaker he knew spoke "staccato and choppy". This is a suprasegmental property that would have been interesting to investigate, especially since it was brought up as a marker of Asian American identification by a participant. Nonetheless, Hall-Lew's paper accomplishes what it initially set out to do: look for the relationship between ethnicity and back vowel fronting in San Francisco's Sunset District.

All the papers investigated and analyzed sought to account for linguistic markers of Asian American speech, with different approaches and variables investigated. Among two of the papers — Hoffman & Walker 2010 and Wong 2007 — a common factor was a survey determining ethnic orientation or affinity. Hall-Lew 2009 had an ethnicity topic as part of the interview process; however, ethnic orientation was not considered. Newman & Wu 2011 and Hanna 1997 did take into account the social network of the speakers, but this was not a variable that was investigated when interpreting judgement data. Whereas Hoffman and Walker's investigation focused on the role of Ethnic Orientation on linguistic variation, Wong's 2007 paper focused on the role of social networks and lifestyles. Newman & Wu expanded on Hanna's 1997 identification study of Asian American speech by not only improving on the identification study itself, but also performing a sociophonetic study to identify the linguistic differences of Asian American English. Hanna (1997), Newman & Wu (2011), and Hall-Lew (2009) mentioned the suprasegmental properties,

such as rhythm and intonation, but did not investigate further, as it was limited by scope of the paper or lack of data. Though all the papers examined found correlations between ethnicity and linguistic markers to varying extents, Newman & Wu (2011) considered the broadest range of linguistic variables, from phonetic variables to suprasegmental, whereas the other papers only looked at one or the other. Interestingly, as a result of the broad range of variables investigated, Newman & Wu (2011) put forth the compelling hypothesis that it is the combination of features that identifies Asian American speech – a hypothesis that should be further explored.

From the evidence presented in these papers, it is entirely possible that there exists a general Asian American ethnolect. However, more investigation must be done to identify specific linguistic features that mark the ethnolect. Rhythm, intonation, and syllable-timing are described to be differentiating features by Hanna, Newman and Wu, and Hall-Lew, which suggests that this could be a potential marker of the ethnolect. This could indicate substrate transfer effects in rhythm and intonation, but further research must be done. However, as Newman & Wu found that there is little difference in rhythm among women while Chinese men were more syllable timed (Newman & Wu 2011), sex must be accounted for when exploring these suprasegmental properties. Furthermore, it would be interesting to integrate Hoffman and Walker's multigenerational approach and Ethnic Orientation variable to Newman & Wu's combination-of-linguistic-variants approach. Though Hoffman and Walker do not directly investigate the existence of an Asian American ethnolect, they interpret the "differences within ethnic groups as evidence for the weak interpretation of ethnolects", proposing that rather than tracing ethnolects to an imperfect L2 acquisition, substrate transfer, or lack of exposure to the community language, the reason may lie in ethnic identity. This hypothesis should also be further explored, in tandem with a consideration of other varieties of English, such as Singaporean English or Malay English, which are influenced by dialects of Chinese (Yeo & Deterding, 2003). This compare-and-contrast approach between Asian American English and (South) East Asian English varieties would allow for greater understanding of potential substrate transfer and contact effects between the heritage language and the dominant language. As the fastest growing racial and ethnic group in the US (López, G, 2020) and the second largest ethnic group in Canada after Europeans (Statistics Canada, 2016), Asian American speech would be interesting to investigate for linguists. As such, sociolinguistic research should dive deeper into the speech patterns of Asian Americans, but race and ethnicity need to play a key role alongside linguistic research methods in order to properly characterize the ethnolect.

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Ka, *tra*, *na* and Consonant-final Roots in Malagasy: Evidence in Genitive Formation and Reduplication

Sijia Zhang

Abstract

In Malagasy, most words have penultimate stress, yet words ending with "weak syllables" (i.e. *ka, tra* and *na*) usually have antepenultimate stress. Some may argue that antepenultimate stress appears because those "weak syllables" are invisible in stress assignment, but extrimetricality assumption cannot explain the fact that certain words ending in *ka, tra, na* also have penultimate stress. This paper aims to test the hypothesis that Malagasy words with antepenultimate stress have a consonant-final root, and penultimate stress is assigned before the epenthesis of the final vowel *a* in the derivation from the underlying forms to the surface forms of those words. Given that the consonant-final root hypothesis has not been tested in morphologically complex words, other than suffixed verbs, this paper investigates the behaviors of nouns and adjectives with *ka, tra, na* endings when they undergo possessive construction and reduplication. I show how the consonant-final root hypothesis could correctly predict the surface forms of morphologically complex words that are derived from antepenultimately stressed words. I also examine the phonological processes that words with antepenultimate stress might undergo when forming morphologically complex units.

1 Introduction

This paper investigates the status of final syllables *ka, tra, na* in Malagasy, a Malayo-Polynesian language of the Austronesian family spoken in Madagascar. Malagasy has a four-vowel system: /i/, /u/, /e/ and /a/, and it has two diphthongs, /ai/ and /au/. The vowel /o/ appears in (primarily French) loan words (Erwin, 1996). The consonant inventory of Malagasy is shown in Table 1.1.1 following the analysis of Keenan & Polinsky (1998):

Table 1.1.1 Consonants in Malagasy

	Bilabial	Labio-dental	Dental	Alveolar	Post-alveolar	Velar	Glottal
Stops	p, b, ^{m}p, ^{m}b		t, d, ^{n}t, ^{n}d			k, g, ^{ŋ}k, ^{ŋ}g	
Fricatives		f, v		s, z			h
Affricates				ts, dz, ^{n}ts, ^{n}dz	t^r, d^r, ^{n}t^r, ^{n}d^r		
Nasals	m			n			
Lateral				l			
Trill				r			

All syllables in Malagasy are of the form (C)V, and pre-nasalized stops such as /^{m}p/ and /^{n}d/ are individual phonemes in Malagasy, not nasal-stop clusters. While most Malagasy words have penultimate stress[1] (Erwin, 1996), words ending with *ka, tra* and *na* (i.e. the so-called "weak syllables") usually have antepenultimate stress (Keenan & Razafimamonjy, 1995). One may argue that the occurrence of antepenultimate stress is because those "weak syllables" are invisible in stress assignment, yet this assumption of their extrametricality cannot account for the fact that words with *ka, tra, na* endings sometimes also have penultimate stress, such as *tanána* 'village' and *lalána* 'road'. Following the assumption in Erwin (1996) and Albro (2005), this paper hypothesizes that Malagasy words with antepenultimate stress have consonant-final roots. Moreover, penultimate stress is assigned before the epenthesis of the final vowel *a*. This consonant-final root hypothesis is only tested in active verbs and suffixed verbs in Erwin (1996), and in reduplication data with an emphasis on verb reduplication (Albro 2005). This paper, with a focus on nouns and adjectives, provides evidence for the consonant-final root hypothesis by

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[1] Words ending in diphthongs have final stress. Erwin (1996) argues that two moras are contained in diphthongs, thus the stress rule is consistent in the analysis of both penultimate stress and final stress: stress the syllable containing the penultimate mora.

examining the behaviors of words with *ka, tra, na* endings when they undergo morphological processes such as suffixation in genitive construction and reduplication.

The paper is organized as follows. Section 2 "Background and Proposal" presents the puzzles related to *ka, tra, na* final syllables and some previous analyses of these syllables. I will illustrate the consonant-final root proposal and the motivation of this proposal in detail. Section 3 "Supporting Evidence" provides evidence in pronominal genitive formation and reduplication and shows how the consonant-final root hypothesis could correctly predict the surface form of morphologically complex words derived from antepenultimately stressed words. A derivational rule-based analysis is adopted. Section 3 also examines the phonological processes that words with antepenultimate stress might undergo when forming a morphologically complex unit. Section 4 "Discussion and Conclusion" discusses remaining issues of this proposal and an alternative analysis regarding *ka, tra na* final syllables, as well as possible avenues for future research.

2   Background and Proposal

2.1   Antepenultimate Stress and "Weak Syllables" *ka, tra, na*: The Puzzle and Background

In Malagasy, stress usually falls on the penultimate syllable of a word (Erwin, 1996). Antepenultimate stress occurs when a word ends in an arguably "weak" syllable – *ka, tra* or *na* (Keenan & Razafimamonjy, 1995). Nevertheless, some words ending in those "weak syllables" still have penultimate stress, which exhibit minimal pairs with their antepenultimate counterparts. Examples include *tanána* 'village' and *tánana* 'hand'. These contrasts seem to show that *ka, tra* and *na* are sometimes invisible to stress assignment, yet sometimes they are not. Furthermore, when nouns with antepenultimate stress undergo genitive constructions from pronouns, instead of suffixing regular genitive pronouns, either the final vowel *a* or the whole final weak syllable is removed, and the genitive suffix (or part of it) is added. For instance, in the formation of *tánako* 'my hand', the final weak syllable *na* in *tánana* is removed, and the first-person singular suffix *–ko* is attached. In contrast, penultimately stressed nouns ending in weak syllables undergo regular pronominal genitive formation, with a genitive suffix added in the end. For instance, *–ko* is suffixed to the penultimately stressed word *tanána* 'village' to form *tanánako* 'my village', without omitting the final syllable *na*. These observations suggest that the syllable *ka, tra* or *na* may or may not be deleted in the process of genitive formation, depending on the position of stress. One possible analysis would be that the weak syllable has an extrametrical phonological status that could account for the assignment of antepenultimate stress, but it is puzzling why other words with weak syllable ending still have penultimate stress. Therefore, the phonological status of the weak syllables in some words needs to be analyzed differently than in the others in order to account for different stress positions and their different behaviors in possessive formation.

In an attempt to solve the puzzle, Keenan and Razafimamonjy (1995) define the group of pseudo-weak lexicon, in contrast with the words ending in real "weak syllables". Although word-final "weak syllables" *ka, tra* and *na* are ignored in stress assignment, if the word is lexically defined as "pseudo-weak", the final syllable will be visible again and the stress will be

penultimate. However, many issues have been raised regarding this analysis. For instance, the motivation is uncertain for this separate, "weak syllable" stress assignment rule as well as the many lexical exceptions to that rule (O'Neill 2015). Thus, a more unified and parsimonious analysis is necessary to account for this variation in stress assignment.

2.2   Consonant-Final Root Proposal

Alternative to the "weak syllables" analysis in Keenan & Razafimamonjy (1995), Erwin (1996) and Albro (2005) posit that all antepenultimately stressed words are underlyingly consonant-final, and the final vowel *a* is epenthetic to prevent word codas. *Ka, tra* and *na* are the surface realizations of all word-final consonants, which neutralize to one of /k, tʳ, n/ before undergoing vowel epenthesis[2] (O'Neil, 2015). Crucially, penultimate stress is assigned before the epenthesis of the final vowel. This assumption not only can account for the occurrence of different stress positions, but is argued to be more parsimonious. It requires no separate stress assignment rule based on what the final syllable is (O'Neill). Even though it necessitates an additional epenthetic process, the motivation is to maintain syllable structure (O'Neill, 2015). Following O'Neill (2015), the ordered-rule analysis of minimal pair *tánana* and *tanána* is given in the derivation table below. The root (i.e. UR) of *tánana* has a final consonant *n*, and the epenthesis of the vowel *a* occurs after stress assignment on the penultimate syllable. In contrast, the root of *tanána* is /tanana/, with a non-epenthetic vowel ending.

Table 2.2.1

Gloss	'hand'	'village'
UR	/tanan/	/tanana/
Stress assignment	/tánan/	/tanána/
Epenthesis	/tánana/	—
SR	[tánana]	[tanána]

Based on the consonant-final root proposal and ordered-rule analysis, Section 3 shows whether the surface forms of words with *ka, tra* or *na* endings can be predicted when they undergo certain morphological processes including suffixation in pronominal genitive formation and reduplication.

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[2] For words with underlying consonant-final roots, the UR forms shown in this paper are roots after their final consonants neutralize to one of the consonants /k, tʳ, n/. This paper is not interested in the identity of the consonants before neutralization. The discussion about their identity can be seen in Albro (2005) and in O'Neil (2015).

3 Supporting Evidence

3.1 Evidence in Pronominal Genitive Formation

This sub-section provides reanalyses of the genitive formation from personal pronouns following the consonant-final root assumption. A genitive pronoun is suffixed to the noun root in regular pronominal genitive formation, for instance, *trano* 'house' becomes *tranoko* 'my house' with the first-person genitive pronoun *-ko* suffixed. Previous studies employ ad-hoc final vowel deletion rules and different types of genitive pronouns suffixed to words with *ka, tra, na* endings compared to those without (Keenan & Polinsky, 1998, Paul 1996). For instance, Table 3.1.1 shows two types of genitive pronouns for nouns without weak endings (Gen.1) and nouns with weak endings (Gen.2) according to Paul (1996).

Table 3.1.1

	1st sg.	2nd sg.	3rd sg./pl.	1st pl. inclusive	1st pl. exclusive	2nd plural
Gen. 1	-ko	-nao	-ny	-ntsika	-nay	-nareo
Gen. 2	-o	-ao	-ny	-tsika	-ay	-areo

Paul (1996) points out that the final vowel *a* drops in weak-ending nouns when the second types of genitives are suffixed, for instance, *soroka* 'shoulder' becomes *soroko* 'my shoulder', yet the motivation of this deletion rule is unclear. The genitive formation patterns of penultimately stressed words with weak endings actually behave like words with non-weak endings, but those "exceptions" are not discussed in Paul (1996). I will show that nouns with *ka, tra, na* endings, either antepenultimately stressed or penultimately stressed, have the same genitive suffixes as other nouns, and extra vowel deletion rules are not needed because the roots of nouns with antepenultimate have consonant endings. However, an incorporation process which refers to a set of phonological rules (e.g. deletion and fortition) that apply to consonant clusters (Lin 2005) is added after the suffixation of genitive pronouns, in order to satisfy the syllable constraints for the surface forms of Malagasy words.

Take the minimal pair *tánana* and *tanána* as an example, Table 3.1.2 provides ordered-rule analyses for both words when the same first-person singular genitive *–ko* is attached to both roots. Based on the consonant-final root proposal, the antepenultimately stressed word *tánana* has the root /tanan/ with final consonant *n*, whereas the root of penultimately stressed word *tanána*, /tanana/, does not have a final consonant. To derive the correct surface forms of both words, I argue that Suffixation occurs after the penultimate stress is assigned to the root. This is because otherwise the stress would be on the penultimate syllable of the suffixed form, which would incorrectly predict the surface forms to be *tanáko* and *tananáko*. The final *n* in the root

/tanan/ is deleted in the incorporation process, which occurs after the suffixation of *-ko*. The deletion of *n* is motivated by maintaining CV syllable structure and prohibiting consonant clusters in Malagasy phonology. Compared to Table 2.2.1 where the epenthetic vowel *a* is added to the consonant-final root, the vowel does not need to be added word finally to prevent codas in either word in Table 3.1.2, since the final syllables are already in CV structure.

Table 3.1.2

Gloss	'my hand'	'my village'
UR	/tanan/	/tanana/
Stress assignment	/tánan/	/tanána/
Suffixation	/tánanko/	/tanánako/
Incorporation	/tánako/	—
SR	[tánako]	[tanánako]

The analyses of the complete pronominal genitive morphology for both words *tanána* and *tánana* are provided in Table 3.1.3 and 3.1.4. In Table 3.1.3, genitive suffixes are directly added to the end of the root /tanana/. Since the root does not end in a consonant, the incorporation process that targets consonant clusters resulting from suffixation does not apply here.

Table 3.1.3, village

Gloss	1sg.	2sg.	3sg./pl.	1pl.(incl.)	1pl.(excl.)	2pl.
UR	/tanana/	/tanana/	/tanana/	/tanana/	/tanana/	/tanana/
Stress assignment	/tanána/	/tanána/	/tanána/	/tanána/	/tanána/	/tanána/
Suffixation	/tanána-ko/	/tanána-nao/	/tanána-ny/	/tanána-ntsika/	/tanána-nay/	/tanána-nareo/
Incorporation	—	—	—	—	—	—
SR	[tanánako]	[tanánanao]	[tanánany]	[tanánantsika]	[tanánanay]	[tanánanareo]

As Table 3.1.4 shows, the genitive suffixes other than the first person singular *-ko* all start with the nasal *n*. When those genitive pronouns are suffixed to /tánan/, which ends with *n*, either the nasals fuse into one, or one of the nasals deletes in the incorporation process. If the

nasal deletes, it is uncertain whether the initial *n* in the suffix elides or the final *n* in the root elides. To figure out a general and consistent incorporation rule, we need to look at the pronominal genitive formation in words with antepenultimate stress that end with *ka* and *tra*.

Table 3.1.4, hand

Gloss	1sg.	2sg.	3sg./pl.	1pl.(incl.)	1pl.(excl.)	2pl.
UR	/tanan/	/tanan/	/tanan/	/tanan/	/tanan/	/tanan/
Stress assignment	/tánan/	/tánan/	/tánan/	/tánan/	/tánan/	/tánan/
Suffixation	/tánan-ko/	/tánan-nao/	/tánan-ny/	/tánan-ntsika/	/tánan-nay/	/tánan-nareo/
Incorporation	/tánako/	/tánanao/	/tánany/	/tánantsika/	/tánanay/	/tánanareo/
SR	[tánako]	[tánanao]	[tánany]	[tánantsika]	[tánanay]	[tánanareo]

Table 3.1.5 and 3.1.6 below exhibit the analyses of genitive formation of *zanaka* and *tongotra* from different pronouns. To account for the incorporation patterns that occur in these two tables as well as in Table 3.1.4, I argue that the final consonant in a root is preferred over the initial consonant in a suffix in the process of incorporation. As we can see in Table 3.1.5 and 3.1.6, when *-nao*, *-nay* or *-nareo* is suffixed to /zának/ and /tóngotr/, the *n* in the suffixes deletes while the final consonants in the roots survive. Similarly, the deletion of the initial consonants in *-nao*, *-nay*, *-nareo* can also be applied in na-ending words, the uncertain case that we discussed in the previous paragraph. When the suffix *–ko* is added, the *k* in the suffix is dropped, and the final *tr* or *k* in the roots survives consistently. In Table 3.1.4, however, when *-ko* is attached, the final *n* in the root is deleted and the initial *k* in the suffix survives in the formation of the surface word *tánako*, not *tánano.* This exception can be explained by the suppletive status of *ko* in Malagasy and other Malayo-Polynesian languages, and the fact that the word *fantatro* 'known by me' can be said as *fantako* suggests some overgeneralization of the suffix *ko* to *tra*-ending words (Paul 1996). Nevertheless, exceptions also occur when *-ny* and *-ntsika* are suffixed to roots ending in *k* or *tr*. For instance, /tóngotr/ with *-ny* suffixed becomes *tóngony*, not *tóngotry* in Table 3.1.6. This may be because the third person genitive forms (e.g. *tongony*) can be phonetically and morphologically better distinguished from other possessive forms of nouns. For example, the form *tongotry* appears in the possessive constructions of proper nouns as in *tongotry Rakoto* 'Rakoto's foot' (Paul 1996). As for the suffixation of *-ntsika* to roots ending in *k* or *tr*, the suffix's initial consonant *nts* only loses its prenazalization; the affricate /ts/ is not deleted, instead, the final consonant *k* or *tr* in the root is dropped.

Table 3.1.5: child

Gloss	1sg.	2sg.	3sg./pl.	1pl.(incl.)	1pl.(excl.)	2pl.
UR	/zanak/	/zanak/	/zanak/	/zanak/	/zanak/	/zanak/
Stress assignment	/zának/	/zának/	/zának/	/zának/	/zának/	/zának/
Suffixation	/zának-ko/	/zának-nao/	/zának-ny/	/zának-ntsika/	/zának-nay/	/zának-nareo/
Incorporation	/zának o/	/zánakao/	/zánany/	/zánatsika/	/zánakay/	/zánakareo/
SR	[zánako]	[zánakao]	[zánany]	[zánatsika]	[zánakay]	[zánakareo]

Table 3.1.6: foot

Gloss	1sg.	2sg.	3sg. /pl.	1pl.(incl.)	1pl.(excl.)	2pl.
UR	/tongotr/	/tongotr/	/tongotr/	/tongotr/	/tongotr/	/tongotr/
Stress	/tóngotr/	/tóngotr/	/tóngotr/	/tóngotr/	/tóngotr/	/tóngotr/
Suffixation	/tóngotr-ko/	/tóngotr-nao/	/tóngotr-ny/	/tóngotr-ntsika/	/tóngotr-nay/	/tóngotr-nareo/
Incorporation	/tóngotro/	/tóngotrao/	/tóngony/	/tóngotsika/	/tóngotray/	/tóngotrareo/
SR	[tóngotro]	[tóngotrao]	[tóngony]	[tóngotsika]	[tóngotray]	[tóngotrareo]

In Table 3.1.7 below, I present more genitive formation data of *ka, tra, na* ending words with either penultimate or antepenultimate stress. We can see that these minimal or near minimal pairs all follow the above-mentioned patterns. Based on the consonant-final root proposal, the suffixed forms of the words with antepenultimate stress can be correctly derived using the same ordered-rule analysis described above.

Table 3.1.7

Word	lálana	lalána	áloka	alíka	pératra	rátra
Root	/lalan/	/lalana/	/alok/	/alika/	/peratr/	/ratra/
Gloss	'road'	'law'	'shelter'	'dog'	'ring'	'wound'
1sg.	lálako	lalánako	áloko	alíkako	pératro	rátrako
2sg.	lálanao	lalánanao	álokao	alíkanao	pératrao	rátranao
3sg./pl.	lálany	lalánany	álony	alíkany	pérany	rátrany
1pl.incl.	lálantsika	lalánantsika	álotsika	alíkantsika	pératsika	rátrantsika
1pl.excl.	lálanay	lalánanay	álokay	alíkanay	pératray	rátranay
2pl.	lalanareo	lalánanareo	álokareo	alíkanareo	pératrareo	rátranareo

3.2 Evidence in Reduplication

We now turn to look at Malagasy reduplication and examine the consonant-root final proposal in the reduplication of *ka, tra, na* ending words with antepenultimate stress and those with penultimate stress. In terms of reduplication in Malagasy nouns and adjectives, everything starting from the syllable with the primary stress to the right edge of the root is copied and suffixes to the root to derive its reduplicated form. For example, *fály* 'happy' becomes *fàlifály* 'somewhat happy', and *saláma* 'healthy' becomes *salàmaláma* 'somewhat heathy'. Based on the proposal that words with antepenultimate stress underlyingly end in consonants, the penultimate stress is first assigned to the consonant-final root, and then the syllables starting from the primary stress to the right edge of the root is copied and is suffixed to the root base. Then, the incorporation process applies, including a set of phonological rules such as deletion and fortition. Finally, the vowel *a* is epenthesized to the right edge of the reduplicated form after the incorporation. The derivation table in 3.2.1 illustrates the ordered-rule analysis of the reduplication in antepenultimately stressed words ending in *tra*. When the copied root is suffixed to the root base, the final consonant *tr* in the root base is deleted when the reduplicant starts with a consonant. For example, in *tèzitézitra*, since the reduplicant *tézitr* starts with *t*, the final *tr* in the root base is deleted to maintain CV syllable structure and prevent consonant cluster in the reduplicated form. In *àntitrántitra*, however, the final *tr* in the root base is reserved, since the reduplicant *àntitr* starts with a vowel and the syllables in the reduplicated form already have CV structures without any deletion. In *mihìsatrísatra*, there is prefixation process in which *mi-* is attached to the left edge of the root[3]. The final *tr* in the root base is not deleted in the

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[3] It is not certain whether the *mi-* part in *mihisatr* is part of the root or it is prefixed to the root, especially it serves as an adjective in the data here instead of a verb. If *mi-* is a prefix, the prefixation can happen either

incorporation process, yet the initial *h* in the reduplicant is removed in the orthography. Since /h/ in Malagasy is barely pronounced, the reduplicant /hísatr/ is phonetically equivalent to /ísatr/ which starts with a vowel. Thus, the final *tr* in the root base does not need to be deleted to repair the syllable structure. Note that if the root were not consonant-final, it would derive an incorrect reduplicated form when the whole root starting from the stressed syllable were copied, including the final vowel. For example, if the root were /tezitra/, not /tezitr/, the reduplicated form would be expected as **tezitratezitra*. In this case, extra rules have to be added to delete the final vowel *a* in the root base /tezitra/ before the reduplicant is suffixed, yet again, it is unclear why words with *ka, tra, na* endings have to be treated differently with separate rules in the process of reduplication.

Table 3.2.1

Gloss	'somewhat angry'	'somewhat old'	'somewhat rough'
UR	/tezitr/	/antitr/	/hisatr/
Stress assignment	/tézitr/	/ántitr/	/hísatr/
Prefixation	—	—	/mihísatr/
Copy	/tèzitr-tézitr/	/àntitr-ántitr/	/mihìsatr-hísatr/
Incorporation	/tèzitézitr/	/àntitrántitr/	/mihìsatrísatr/
Epenthesis	/tèzitézitra/	/àntitrántitra/	/mihìsatrísatra/
SR (reduplicated form)	[tèzitézitra]	[àntitrántitra]	[mihìsatrísatra]

Table 3.2.2 demonstrates the reduplication in *ka*-ending antepenultimately stressed words. As in *pètapétaka* and *màsamásaka,* the final *k* in the base root is deleted to maintain CV syllable structure when the reduplicant is suffixed, at least for reduplicant that starts with a consonant. We do not have data that start with a vowel and end in *ka*, but such hypothetical words would likely have the same patterns as *tra*-ending words, in which the final *k* is not deleted to repair syllable structure. In *lànadánaka,* the initial /l/ in the reduplicant undergoes fortition, turning into the voiced stop /d/ with the same place of articulation.

Table 3.2.2

Gloss	'somewhat flat'	'somewhat exhausted'	'somewhat ripe'
UR	/petak/	/lanak/	/masak/
Stress assignment	/pétak/	/lának/	/másak/
Copy	/pètak-pétak/	/lànak-lának/	/màsak-másak/
Incorporation	/pètapétak/	/lànadának/	/màsamásak/
Epenthesis	/pètapétaka/	/lànadánaka/	/màsamásaka/
SR (reduplicated form)	[pètapétaka]	[lànadánaka]	[màsamásaka]

For the reduplication in na-ending words with antepenultimate stress shown in Table 3.2.3, it is interesting to see that the final /n/ in the base root is realized as homorganic as the initial consonant in the reduplicant. The nasals are not deleted to maintain the CV syllable structure, because they are realized as single prenasalized consonants with the following stops, namely, /mp/, /nd/ and /ŋk/. The initial consonant of the reduplicant undergoes fortition. For instance, the initial fricative /v/ in the reduplicant /vízan/ becomes the stop /b/ in vìzambízana, and the initial fricative /h/ in /haíngan/ becomes the stop /k/ in haìngankaíngana. Moreover, as discussed before, the initial liquid /l/ in /lálin/ becomes the stop /d/ in làlindálina. If the root were /lalina/ which ends in a non-epenthetic vowel, the reduplicated form would be incorrectly derived as *lalinadalina, since there is no transparent motivation to remove the vowel *a* in the base. Similarly, if the root of antepenultimately stressed word vízana were /vizana/, then its reduplicated form would be *vizanabizana, which is not the correct form. Therefore, the reduplicated forms of antepenultimately stressed words with ka, tra, or na endings can be correctly derived under the hypothesis that the roots of those words end in consonants.

Table 3.2.3

Gloss	'somewhat hot'	'somewhat tired'	'somewhat quickly'
UR	/lalin/	/vizan/	/haingan/
Stress assignment	/lálin/	/vízan/	/haíngan/
Copy	/làlin-lálin/	/vìzan-vízan/	/haìngan-haíngan/
Incorporation	/làlindálin/	/vìzambízan/	/haìngankaíngan/
Epenthesis	/làlindálina/	/vìzambízana/	/haìngankaíngana/
SR (reduplicated form)	[làlindálina]	[vìzambízana]	[haìngankaíngana]

For words with penultimate stress, including those that end in *ka, tra, na*, their roots do not have a final consonant, as illustrated in section 2.2 (i.e. *tanána* vs. *tánana*). In reduplication, it is expected that the final vowel a of those words would not be epenthetic, thus the penultimate syllable and the final syllable of the root should be all copied in reduplication. In Table 3.2.4, we can see that the examples *mènaména* and *salàmaláma* (Lin 2005)[4] follow this prediction. However, this is not always the case. The reduplicated form of the bisyllabic penultimately stressed word *léna* is expected to be *lènaléna*, since the root should be /lena/. The correct surface form is actually *lèndéna*, which seems to show that the root is /len/ with a final consonant, and the final vowel a is epenthesized after the root is copied. This construction resembles the pattern of antepenultimately stressed words. Similarly, the reduplicated form of *rátra* is *ràdrátra*, instead of *ràtrarátra*, which suggests that the root is /ratr/. The affricate /tr/ of the root and the following trill /r/ becomes voiced affricate /dr/ in the incorporation process. It is possible that some bisyllabic penultimately stressed words do have consonant-final roots, just like those polysyllabic antepenultimately stressed words. But since they only have two syllables, their underlying forms cannot be suggested by the assignment of stress position. In another word, the stress has to be assigned penultimately since there is no antepenultimate syllable, even though the antepenultimate stress would have been an optimal option for a word with consonant-final root. To further confirm this assumption, more reduplication data of polysyllabic words with penultimate stress and *ka, tra, na* endings are needed to compare their patterns with bisyllabic words and words with antepenultimate stress.

Table 3.2.4

Gloss	'somewhat ripe'	'somewhat healthy'	'somewhat wet'		'somewhat with wounds'	
UR	/mena/	/salama/	*/lena/	/len/	*/ratra/	/ratr/
Stress	/ména/	/saláma/	*/léna/	/lén/	*/rátra/	/rátr/
Copy	/mèna-ména/	/salàma-láma/	*/lèna-léna/	/lèn-lén/	*/ràtra-rátra/	/ratr-rátr/
Incorporation	—	—	*/lènaléna/	/lèndén/	*/ràtrarátra/	/ràdrátr/
Epenthesis	—	—	—	/lèndéna/	—	/ràdrátra/
SR (reduplicated form)	[mènaména]	[salàmaláma]	*[lènaléna]	[lèndéna]	*[ràtrarátra]	[ràdrátra]

[4] The example *salàmaláma* is selected from Lin (2005) since the data I have are still limited, especially the reduplication data for polysyllabic words with penultimate stress and *ka, tra, na* endings.

4 Discussion and Conclusion

We have seen how the consonant-final root proposal and the use of ordered-rule analysis correctly predict the surface forms of words with antepenultimate stress that undergo genitive suffixation and reduplication. As mentioned as Section 2, an alternative analysis given in Keenan & Razafimamonjy (1995) and Keenan & Polinsky (1998) is to assume that all words, including both antepenultimately stressed and penultimately stressed words, have vowel-final roots, which are the same as their surface forms. Except for some "pseudo-weak" words[5], the other *ka, tra, na* ending words are argued to be weak since their final syllables are deleted (or partially deleted, only the final vowel of the syllable is dropped) or substituted in morphological processes such as reduplication and compounding. As for reduplication, Keenan & Polinsk (1998) argue that the final vowel of the root will elide if the reduplicant is vowel-initial. For instance, *antitrantitra* is derived from the root /antitra/, and the final *a* of the root base elides. If the reduplicant is consonant-initial, Keenan & Polinsky (1998) claim that "the root endings –*ka* and –*na* are deleted". For example, *tezitezika* is derived from the root /tezika/, and the final syllable *ka* of the root base elides. However, the motivation for the occurrence of these different patterns is not illustrated in Keenan & Polinsky (1998). If the motivation for deleting the final syllable of the root when the reduplicant starts with a vowel is to prevent a long vowel or certain diphthongs that are not allowed in Malagasy, it is unclear what would motivate the whole *ka, tra, na* syllables to be deleted when the reduplicant begins with a consonant. Essentially, it is not clear why some of the *ka, tra, na* ending words pattern as "weak", yet others do not, according to this analysis. In contrast, by positing that words with antepenultimate stress have consonant-final roots and applying proposed rules in a consistent order, the surface forms of both antepenultimately stressed words and penultimately stressed words can be correctly derived. As discussed in section 3, the motivation for the process Incorporation is clear in this analysis, namely, to repair the CV syllable structure and to prevent consonant clusters, ultimately respecting the phonological constraints in Malagasy.

The incorporation rules that occur in genitive formation and reduplication of antepenultimately stressed words include deletion and fortition. To repair the CV syllable structure and prevent consonant clusters, deletion applies when a genitive suffix is attached. In deciding which consonants to keep and which to omit, the final consonants of roots are generally preferred over the initial consonants of genitive suffixes. In terms of fortition that occurs in reduplication, liquids and fricatives become stops with the same place of articulation. The glottal fricative /h/ in Malagasy is barely pronounced, and it behaves differently in the incorporation process. It is either deleted before a vowel, as in /misatr/ --> *mihìsatrísatra*, or it becomes a velar stop /k/ as in /haigan/ --> *haìngankaíngana*. The behavior of /h/ in different phonological contexts can be further examined in a future study.

Nevertheless, some issues remain in this study. The reduplication data for words ending in *ka, tra, na* with penultimate stress are not sufficient, especially for polysyllabic words. It is expected that those words with penultimate stress should copy the penultimate and final

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[5] Those lexically defined "pseudo weak" words are actually penultimately stressed words ending with *ka, tra, na*, or bisyllabic words ending with *ka, tra, na*.

syllables of the root in reduplication and share the same incorporation process (i.e. deletion and fortition) with words with antepenultimate stress. However, some bisyllabic penultimately stressed words, like *léna*, do not follow the anticipated reduplication pattern. The unexpected reduplication patterns of bisyllabic penultimately stressed words need to be further investigated, and reduplication data of polysyllabic penultimately stressed words with *ka, tra, na* endings are also needed to further examine the consonant-final root proposal.

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