Tone assignment of French loanwords in Vietnamese

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1 Introduction

Barker (1969) provides a good overview of how French loanwords are adapted into Vietnamese. There are two primary issues to address, essentially, in these adaptations. The first has to do with syllable structure, including phonological inventory: generally speaking, Vietnamese is a predominantly monosyllabic language which disallows consonant clusters and where consonantal codas are marked. On the other hand, French is a polysyllabic language, which allows both consonantal clusters as well as codas.

Additionally, the phonological inventories of both languages differ: French, for example, has contrastive nasalized vowels. Moreover, Vietnamese can be basically divided into Northern and Southern dialects. Barker does not specify which dialect he is working with, but my general sense given his data is that it leans towards the Northern dialect. As my own dialect is predominantly Southern, I will make note of when I adapt his generalizations where relevant.

The second major issue adaptions will face is dealing with suprasegmental information. Specifically, Vietnamese is a tonal language, where each syllable receives one of six tones (written, and commonly interpreted, as five tones and an unmarked tone). As French is a non-tonal language, Vietnamese speakers are in theory free to use whichever tone they like in adaptations. This is shown to not be the case, with tone assignment being incredibly regular, more so in fact than within native words.

With respect to syllable structure, then, it is clear that Vietnamese adaptations of French loanwords will often have to resyllabify words in order to make loan adaptations conform with basic native Vietnamese syllable structure. This will include two primary repair strategies: (stress-sensitive) truncation of polysyllabic forms, and breaking up consonant clusters either through deletion or epenthesis.

Looking at the segmental aspects of adapted syllables, however, we see a greater degree of flexibility. The most prominent example of this is that word-initial /p/ is prohibited within native Vietnamese words, but is allowed within loanwords. In other words, within the core-periphery structure posited by Itô & Mester (1996, 1999), the repair strategy for basic syllabic structure remains close to the lexical core, while the actual segmental make-up of the syllables lies further to the periphery of this lexical core.

Tone assignment, on the other hand, moves in the opposite direction in what has been called a 'retreat to the unmarked' (Kenstowicz, 2005). In these cases, as Kang (2010) writes "loanwords conform to *stricter* structural requirements than the native phonology" (pg 2299). We see that

in repairing loans from French, Vietnamese only uses a reduced tonal subsystem which does not include tones with complex contours or laryngealization. While I don't delve into why this may be the case, I show that this retreat to the unmarked for tone assignment can be handled by reranking cloned faithfulness constraints for French words lower than where native Vietnamese faithfulness constraints are ranked: specifically Vietnamese faithfulness must dominate tone (most) tone markedness constraints, while French faithfulness must be ranked below them.

2 Vietnamese tones

2.1 Native tone tonology

Vietnamese is traditionally analyzed as having six tones, which are a complex in combining pitch contours with voicing quality:

(1)

Tone	Diacritic	Basic description
ngang	a (unmarked)	mid-high level; modal voice
sắc	á	high rising; modal voice
huyền	à	low falling; modal(/breathy)
nặng	ạ	low; creaky
hỏi	ả	falling rising
ngã	ã	falling rising; creaky voice/glottal stop before rise

These tones reflect standard Northern Vietnamese pronunciation. Southern Vietnamese has been reported to have only five tones, merging *hỏi* and *ngã*, as well as making only limited use of voice quality in tonal contrasts (Brunelle, 2009). However, these tones are largely irrelevant to loanwords, as they are never assigned to borrowings, and so this distinction between Northern and Southern Vietnamese dialects can be largely ignored.

These tones are found freely across Vietnamese words with the exception that syllables which end in obstruents can only receive the high rising tone (*sắc*) or the low creaky tone (*nặng*).

(2) ba 'three'
bá 'governor'
bà 'lady'
bạ 'strengthen'
bả 'poison'
bã 'residue'

(3) bác /bá:k/ 'uncle/aunt older than father'
bạc /bạ:k/ 'silver'
*bac/*bàc/*bảc/*bãc

While the restriction on native tone assignment raises the interesting question of what the tones in the underlying forms of words with obstruent codas are, what is important here is that this restriction on tone is highly ranked within the native phonology.

2.2 Loanword tonology

Tone assignment to loanwords in Vietnamese is straightforward, with the default tone *ngang* assigned nearly across the board. As segmental information is not important at this time, I will preserve native orthography in the following examples from Barker (1969):

(4) (a) Open monosyllabic words without obstruent coda

Vietnamese loan	**French source**	**gloss**
ba	papa	'dad'
bơ	beurre	'butter'
ga	gas	'accelerator'
lô	lot	'lot/portion'
nơ	noeud	'bow(tie)'
pha	phase	'phase'
pha	phare	'headlight'
xi	cire	'wax'
xu	sou	'coin'

(b) Closed monosyllabic words without obstruent codas

Vietnamese loan	**French source**	**gloss**
ban	balle	'ball'
bom	bombe	'bomb'
đoan	douane	'customs'
găng	gant	'gloves'
gôn	goal	'goal'
phim	film	'movie'
tăng	tank	'tank'
tem	timbre	'postage stamp'

(4a) are examples of loanwords with open syllables, while (4b) are examples with non-obstruent codas, which are all nasals, as Vietnamese does not allow fricative codas (evidenced by Fr. *phase* > Viet *pha*, for example). All these examples provide evidence to believe that the *ngang* tone is the least marked in tone assignment.

With native Vietnamese words, we saw that words with obstruent consonants restricted the tone to either *sắc* or *nặng*. This constraint also applies to both monosyllabic loanwords with obstruent codas, as well as every syllable of a polysyllabic loanword with an obstruent coda, although in all these cases, we only see the high rising tone *sắc* being assigned, never the low creaky tone *nặng*.

(5) (a) monosyllabic words with obstruent codas

Vietnamese loan	**French source**	**gloss**
bóp	portefeuille	'wallet'
cóp	copier	'to copy'
cúp	couper	'to cut'
cúp	coupe	'trophy'
gác	garde	'guard'
lít	litre	'liter'
mét	metre	'meter'
mốt	mode	'fashion'
phớt	feutre	'felt'
xúp	soupe	'soup'
tách	tasse	'cup'
vát	watt	'watt'
xiếc	cirque	'circus'
xốt	sauce	'sauce'

(b) polysyllabic words with obstruent codas

Vietnamese loan	**French source**	**gloss**
bít tết	bifteck	'beefsteak'
búp bê	poupée	'doll'
ma dút	mazout	'diesel'
tắc xi	taxi	'taxi'
xích lô	cyclo	'pedicab'

As the data above show, any syllable with an obstruent coda in a loanword receives high tone[1]. This happens whether or not the syllable corresponds with a monosyllabic loan, or is part of a polysyllabic loan.

A third generalization that arises in tone assignment occurs in bisyllabic loans, wherein the first syllable will often get the low falling *huyền* tone if it does not have an obstruent coda (in which case, it will get the *sắc* tone, as shown above).

(6) (a) bisyllabic loans (no obstruent coda in first syllable)

Vietnamese loan	**French source**	**gloss**
cà phê	cafe	'coffee'
cà rốt	carotte	'carrot'
gà ram	gramme	'gram'
cà rem	crème	'ice cream'
sà lan	chalande	'barge'
xà bông	savon	'soap'
xà lách	salade	'salad'

(b) bisyllabic loans (obstruent coda in first syllable)

[1]Barker (1969) lists one counterexample to this: *vẹc ni*, 'varnish', from French *vernis*. However, modern dictionaries and internet searches show that the predominant form is *véc ni*, which is consistent with the obstruent coda generalization

Vietnamese loan	**French source**	**gloss**
bít tết	biftek	'beefsteak'
búp bê	poupée	'doll'
(ét) xăng	essence	'gasoline'
tắc xi	taxi	'taxi'
xích lô	cyclo	'pedicab'

There are, however, bisyllabic loans that do not fall into this pattern, even when the first syllable does not have an obstruent coda. Neutral *ngang* tone is assigned in this case to the first syllable, with the second syllable receiving *sắc* tone if there is an obstruent coda. This pattern of across the board *ngang* assignment except for syllables with obstruent codas also seems to be the strategy for polysyllabic loans greater than two syllables.

(7) polysyllabic loans without initial *huyền* tone

Vietnamese loan	**French source**	**gloss**
ăng tên	antenne	'antenna'
ca lô	calot	'garrison cap'
ca lo	calorie	'calorie'
ca nô	canot	'motorboat'
ca vát[2]	cravate	'necktie'
cao su	caottchouc	'rubber'
cu li	coolie	'coolie'
đăng ten	dentelle	'lace'
kilô	kilogram	'kilogram'
kilômét	kilomètre	'kilometer'
ma dút	mazout	'diesel'
mô-tô	motocyclette	'motorcycle'
ô-tô	automobile	'automobile'
pôke	poker	'poker (card game)'
ra.đi.ô	radio	'radio'
va li	valise	'suitcase'
vani	vanille	'vanilla'
xi-măng	ciment	'cement'

As can be seen, there seem to be at least as many bisyllabic loanwords that do not receive *huyền* tone on the first syllable as bisyllabic loanwords that do. Additionally, all the examples of *huyền* tone in the first syllable in (8c) appear to have similar syllabic and segmental structure, providing good reason to believe that neutral *ngang* tone is being applied across the board for polysyllabic loans, with exceptions being derivable via constraint interaction in repair strategies. More specifically,

[2]Although this is the form listed by Barker (1969), modern dictionary listing and internet references list this loan as *cà vạt*, which while conforming to the trend of *huyền* tone on the first syllable of a bisyllabic loan, is even more anomalous in being the only example I've come across where the *sắc* tone being universally applied to syllables with obstruent codas is violated. However, this form still conforms to the general constraint in Vietnamese phonology of restricting tones in these syllables to either *sắc* or *nặng*, implying that if tone assignment to loanwords in Vietnamese is more unmarked than native phonology, then this may be an example of a loanword that has moved to the periphery of that less marked domain.

the data imply that the *huyền* tone is only assigned to the initial syllable of bisyllabic loanwords when there is a open syllable followed by a closed syllable.

Some exceptions to this may be *cà phê*, where the first open syllable receives *huyền* tone even though the second syllable is not a closed, and *ca vát*, *ma dút* and *xi-măng*, where the first open syllable does not receive *huyền* tone even though the second syllable is closed. In the first case, we may stipulate that the generalization has to do with syllable weight rather than how openness, and that a vowel such as *ê* ∼ /e/ is long enough to constitute a heavy syllable – however, while Vietnamese does have some vowel length distinctions, this account as is seems far too simplistic, and far more research on syllable weight would have to be done to make this type of analysis work. Especially given the nature of the second set of exceptions, I will treat these words for now as being lexically indexed as exceptions.

The general description of tone assignment for French loanwords in Vietnamese, adapted from Barker (1969), is the following:

(8) **Tone assignment strategies**

(a) All syllables are assigned neutral mid-high level *ngang* tone by default

(b) All syllables ending in obstruents receive high rising *sắc* tone

(c) If a loan is adapted as bisyllabic word comprising an open initial syllable and a final closed syllable, the initial open syllable will receive low falling *huyền* tone.

The goal of this paper, then, will be to devise an OT style system of constraints that can capture these tone assignment strategies, providing a formal updating of Barker's descriptions.

3 Constraints on tone assignment

3.1 The default strategy (8a-8b)

I will assume a general constraint STRUC, which will stand in for the various constraints that deal with adapting segmental information, such as correlating nasalized vowels in the input to insertion of a post-vocalic nasal. I will also assume that any unmentioned constraints having to do with syllabic structure are also a part of STRUC: e.g. constraints determining whether or not to delete consonants within clusters, or to epenthesize vowels for resyllabification, such as the variations *kem* and *cà rem* from French *crème*, 'ice cream'[4]. STRUC, then, can be seen as the constraints which govern canonical native Vietnamese syllable structure and segmental inventory.

I believe these to be fair assumptions to make, as in the instances where tone and segmental information do interact, it appears quite clear that tone is the dependent element. That is, for example, while a final obstruent always correlates with either the *sắc* or *nặng* tone in native Vietnamese words, those tones can occur without the presence of a final obstruent; the segmental information seems to determine tone, but never vice versa. Additionally, the variable adaptations of *crème* mentioned above imply a general strategy of ensuring that segmental and syllabic structure is correct, with tone assignment then being sensitive to those adaptations – there doesn't seem

[4]It should be noted that though both variations can mean 'ice cream' in Vietnamese, at least in my dialect, *kem* can also mean 'cream' at least as often, if not more, while *cà rem* only ever means 'ice cream'. My intuitions are that this divergence in meaning was post-hoc to the variable adaptations, rather than a factor in it.

to be much reason to believe that reverse is true (that segmental and syllabic structure in repair strategies is sensitive to tone assignment).

In order to account for every syllable requiring some tone, there should be a constraint NGANG, which assigns a violation for any syllable that does not have the neutral *ngang* tone. This constraint also ensures that *ngang* is the default, unmarked tone. Additionally, in order to account for the *sắc* tone on syllables with obstruent codas, there is a constraint ˊ[+OBS], which will assign a violation for every vowel before a final obstruent that does not receive the high rising *sắc* tone (due to the lack of consonant clusters, I'm simply generalizing to the *sắc* tone before obstruents).

As the generalization that high tone before final obstruents seems to be unviolated, ˊ[+OBS] must dominate NGANG. As input forms from French have no tone associated with them, it is difficult to determine whether or not ˊ[+OBS] or STRUC dominate each other. In fact, the generalization that obstruent-final syllables receive SẮC tone holds for native Vietnamese words as well, so we can assume that ˊ[+OBS] is a part of STRUC, along with a constraint that also allows for the low creaky *nặng* tone to surface on obstruent-final syllables. Since this latter case doesn't appear to occur in French loanwords, I will assume that ˊ[+OBS] dominates STRUC.

(9) **Constraints for default tone assignment and obstruent codas**

(a) STRUC: one violation for illegal syllable structure or segments (that are unmentioned by other constraints)

(b) NGANG: one violation for every syllable that does not receive *ngang* tone

(c) ˊ[+OBS]: one violation for any vowel before an obstruent coda that does not receive *sắc* tone

(10) **Ranking of constraints:**
ˊ[+OBS] » STRUC » NGANG

These constraints will handle the majority of tone assignment cases, where syllables receive default tone assignment unless having an obstruent coda. In the following tableaux, candidates with unmarked French orthography represents fully faithful pronunciation with no tone assignment; French orthography marked with tones represents faithful syllabic/segmental candidate with respective tone assignment; Vietnamese orthography represents candidates adhering to syllabic/segmental requirements of STRUC:

(11) Open monosyllable

'beurre'	ˊ[+OBS]	STRUC	NGANG
a. beurre		∗!	
b. béurre		∗!	∗
c. ☞ bơ			
d. bớ			∗!

(12) (a) Closed monosyllable non-obstruent coda

'film'		ˊ[+OBS]	STRUC	NGANG
a.	film		∗!	
b.	fílm		∗!	∗
c. ☞	phim			
d.	phím			∗!

(b) Closed monosyllable obstruent coda

'sauce'		ˊ[+OBS]	STRUC	NGANG
a.	sauce		∗!	
b.	sáuce		∗!	∗
c.	xôt	∗!		
d. ☞	xốt			∗

(c) Closed monosyllable obstruent coda (no restructuring required)

'soupe'		ˊ[+OBS]	STRUC	NGANG
a.	soupe	∗!		∗
b.	xup	∗!		
c. ☞	xúp			∗!

(13) All-open polysyllable

'valise'		ˊ[+OBS]	STRUC	NGANG
a.	valise		∗!	∗∗
b. ☞	va li			
c.	vá li			∗!
d.	va lí			∗!

(14) (a) Polysyllable with closed non-obstruent coda syllables

'antenne'		ˊ[+OBS]	STRUC	NGANG
a.	antenne		∗!	∗∗
b. ☞	ăng tên			
c.	ắng tên			∗!
d.	ăng tến			∗!

(b) Polysyllable with closed obstruent coda syllable

'biftek'		ˊ[+OBS]	STRUC	NGANG
a.	biftek		∗!	∗∗
b.	bit têt	∗!∗		
c.	bít têt	∗!		∗
d. ☞	bít tết			∗∗

As examples (11-14b) demonstrate, default tone assignment strategy can be captured by two tone constraints, ´[+OBS] and NGANG, alongside the cluster of constraints which regulate syllable structure and segment inventory in adaptations. Note that while I have made ´[+OBS] dominate STRUC, the ranking of these two constraints relative to each other is actually unimportant – and as I mentioned, we can actually consider ´[+OBS] a tone-sensitive structural constraint itself.

3.2 Bisyllabic exceptions (9c)

The adaptation strategy which targets bisyllabic forms, as expressed in (8c), will require more decomposition of the STRUC cluster of constraints, as there is clear interaction between input structure and tone assignment. Specifically, we want constraints that parse syllables into trochaic feet from the left edge and assigns the *huyền* tone to the non-head of the foot. This is in keeping with generalization that prosodic (stressed) heads prefer higher tones, while non-heads prefer lower tones (de Lacy, 2002); Kang (2010) provides several examples of tone languages which assign high tone to stressed syllables of foreign loanwords. However, although French's stress patterns do not appear to be robust enough to take into account here (this is from personal communication with Jackson, and would require better sources in order to be thorough).

So while we generally want the non-head of leftmost iambs to take a low tone, Vietnamese provides at least two options for low tones: *huyền* and *nặng*. Looking at the data, though, the only tones that appear on loanwords are 'simple' ones: complex contour tones and ones that have laryngealization (creaky voice) do not show up in non-native words, it seems. Brunelle (2009) provides experimental evidence that voice quality and contour complexity are involved in Vietnamese tone perception (with interesting organizational geometries for North vs. South dialects). As such, I propose that there is a high-ranking constraint *COMPT which bans complex (contour/voice quality) tones. Assuming that we want ´[+OBS] to hold for native vocabulary as well as loans, I assume a ranking in which ´[+OBS] » *COMPLEX T, though *COMPLEX T will be assumed to dominate all other constraints within my tableaux.

With *COMPT outlawing complex tones, the three tones that remain – *sắc*, *ngang* and *huyền* – correspond (respectively) to high, mid and low tones, which makes the tone assignment strategy for French loanwords in Vietnamese look similar to the tone-to-stress patterns in de Lacy (2002). In subsequent discussion, I will refer to the relevant tonal subsystem *sắc*, *ngang* and *huyền* variably as high (H), mid (M) and low (L) tones.

The first task, then, is to build iambs from the left edge of the prosodic word. To do this, I adopt a similar set of constraints to de Lacy (2002)'s account of Ayutla:

(15) (a) IAMB: every foot is right-headed (Prince & Smolensky, 1993)

(b) FTBIN: every foot is binary at the syllabic (or moraic) level (McCarthy & Prince, 1986, 1993)

(c) ALLFTL: left edge of foot is aligned with left edge of prosodic word (McCarthy & Prince, 1993)

(d) PARSE: every syllable is contained within a foot (Prince & Smolensky, 1993)

While few loanwords in Vietnamese are three or more syllables, we can see in loans like *kilômét* that the bisyllabic generalization doesn't apply to the final two syllables (**kilômét*); I take this to be an indication that feet are always aligned to the left edge of the prosodic word. That is, ALLFTL

» Parse. By also ranking FtBin above Parse, we can also ensure that no degenerate feet are formed, and in my analysis, I will only look at binary feet).

Further following de Lacy (2002), I assume that non-heads can attract low tones by having constraints militate against assigning non-heads high or mid tones. De Lacy proposes two constraints *Non-Hd/H and *Non-Hd/M, which for convenience I will abbreviate as Non-Hd/L, which is essentially a combination of the two constraints. An example of the bisyllabic generalization, then, is the following:

(16)

crème		Non-Hd/L	Parse	ngang
a.	(ca.rem)	∗!		
b. ☞	(cà.rem)			∗
c.	ca.rem		∗!∗	
d.	(ca.rém)	∗!		∗

The next problem is to make this low tone assignment sensitive to the weight, as the generalization only holds when it is the case that the non-head is light and the head is heavy. However, this appeals to the idea that the head of a foot should be more prominent: while this generally correlates to stress and/or tone, we might also assume in the case of Vietnamese there is also a correlation with syllable weight. Specifically, the head of an iambic foot in Vietnamese should be heavier than the non-head.

One way of implementing constraints that can do this is to analogize de Lacy's markedness constraints on tone and headedness, and introduce two constraints:

(17) (a) *Hvy non-Hd: penalizes non-heads that are heavy

(b) *Lt Hd: penalizes heads that are light

For the sake of brevity, as these two constraints are ranked next to each other, I will abbreviate them as Heavier Hd. In order to prevent bisyllabic feet with non-heavier heads from being formed, Heavier Hd must dominate Parse. We can now look at the two types of cases where bisyllabic loanwords do not get assigned low tone on the first syllable:

(18) (a)

valise		Non-Hd/L	Heavier Hd	Parse	ngang
a.	(va.li)	∗!	∗		
b.	(và.li)		∗!		∗
c. ☞	va.li			∗∗	

(b)

antenne		Non-Hd/L	Heavier Hd	Parse	ngang
a.	(ăng.tên)	∗!	∗		
b.	(ăng.tên)		∗!		∗
c. ☞	ăng.tên			∗∗	

As (18) shows, in the cases where the resulting foot would have either a heavy non-head or a light head, it is preferable not to parse any feet at all. The unparsed syllables then are automatically

assigned default mid tone by the NGANG constraint, as we have seen it do before. And because the head of the foot does not correlate to any prominence other than tone (assuming that the high-ranking STRUC constraints prevent any further structural repairs in order to not violate HEAVIER HD), the pronunciation of two mid tone syllables in a foot is no different than the pronunciation of two unparsed mid tone syllables.

Including ALLFTL, we now also have all the necessary components to evaluate tone assignment for polysyllabic forms such as *kilômét*:

(19)

kilomètre		NON-HD/L	HEAVIER HD	ALLFTL	PARSE	NGANG
a.	(ki.lô).mét	*!	*		*	*
b.	(kì.lô).mét		*!		*	**
c.	ki.(lô.mét)	*!		*	*	*
d.	ki.(lồ.mét)			*!	*	**
e. ☞	ki.lô.mét				***	*

As (19) demonstrates, ALLFTL prevents an iambic foot from being parsed away from the left edge, even though we expect that the final two syllables might be a potential iamb for low tone assignment to the non-head. And in fact, candidate (19d) does show that it's actually better to parse the final two syllables into a foot than the first two, as the weight prominence would not be violated. However, as we saw in (18), the optimal solution is still to incur more violations in PARSE and avoid building marked feet altogether.

The real test for this analysis would be to see if there are attested polysyllabic loans with a viable initial iambic foot, such as a $\sigma_\mu\sigma_{\mu\mu}\sigma_\mu$ structure. Here we might expect low tone assignment to be assigned to the first syllable. My intuition, however, is that there are structural constraints which generally prefer truncation of syllables after non-initial heavy syllables. This, of course, would also warrant further data collection to verify.

4 Native vs. Loan faithfulness

In the previous section, I discussed how a constraint-based analysis of the tone assignment description provided by Barker (1969) could be formulated. Assuming that ranking these constraints as I have allows us to capture tone assignment strategies for French loanwords into Vietnamese, we are left with the issue of why it is that native Vietnamese words do not seem to be directly affected by these constraints.

While the correlation between *sắc* tone and obstruent codas is also maintained within native words, we do see evidence, of course, of other tones besides the default *ngang* tone, which is assigned to all syllables unspecified for tone. There is evidence of *ngang* being a default tone in Vietnamese, by looking at reduplication pattern and lexical frequency (Kang, 2010; Avery, 1983; Pham, 2003), which is a good indication that a NGANG is a viable constraint even within the native vocabulary.

The truly interesting effect is Barker's third generalization, which outlines the assignment of the *huyền* tone on the initial syllable of certain bisyllabic loans. I have shown that we can capture this pattern by first stipulating that *COMPLEX T is a highly ranked tone-markedness constraint, which prevents tones with complex contours or pharyngealization from being assigned to loanwords. The resulting three tones form a high-mid-low tone system which can be shown to interact with foot-building constraints to give us the attested patterns.

Since Vietnamese is a tonal language, native Vietnamese inputs have inherent tone and faithfulness to input tone most outrank all of the tone markedness constraints, except for ˊ[+OBS] which is never violated even with the native lexicon. Assuming that NON-HD/L, *HVY NON-HD, *LT HD, ALLFTL, PARSE, NGANG, FTBIN and IAMB comprise MARKEDNESS$_{tone}$ constraints, and collapsing ˊ[+OBS] back into STRUC, we have the following ranking hierarchy for native words: STRUC » FAITH$_{Viet}$ » MARKEDNESS$_{tone}$.

However, we know that faithfulness constraints cannot be ranked above MARKEDNESS$_{tone}$ for French loanwords, because that would result in no tone assignment at all, assuming that the base correspondent has no inherent tone, a natural assumption to make about French words. While one could potentially argue that it could be true that there simply is no tone assignment in loanwords, and that this is indistinguishable from the unmarked *ngang* tone, one would also have to explain why this null tone assignment is stable. That is, though unmarked, NGANG still has definitive phonetic and phonological properties (Brunelle, 2009), which the loanword default tone corresponds with. If there were truly a null tone on loanwords, we might expect variation from these contrastive tone features and properties, which is not the case.

And even if we did posit this analysis, we would not have a way of capturing why the *huyền* tone assignment pattern applies relatively regularly to loanwords, but not to native Vietnamese words. While native words are generally monosyllabic, compounding is a regular and productive process, leading to potentially bisyllabic words – proper names are also potentially polysyllabic – though none of these native words seem to exhibit the pattern with *huyền* assignment, as far as I know. Once again, this may be possible to capture if we assume that these polysyllabic forms are compositional in some way that monosyllabic words are not, and that these varying morphological levels somehow block bisyllabic *huyền* assignment.

What seems to be more likely the case, however, is that French loanwords are indexed to cloned faithfulness constraints which are ranked differently than the native faithfulness constraints. This is in fact the type of approach that Itô & Mester (1999) use in accounting for loanwords in Japanese. For them, native faithfulness is lowest ranked, with increasing strata of cloned faithfulness for levels of assimilated vocabulary; that is, loanwords on the periphery have the highest ranked faithfulness constraints, and thus allow more violations of markedness constraints than native Yamato vocabulary.

This is the opposite of the case that we want for French loanwords in Vietnamese, however, where we want faithfulness constraints for French loans to be dominated by the tone markedness constraints. In other words, we want a general hierarchy STRUC » FAITH$_{Viet}$ » MARKEDNESS$_{tone}$ » FAITH$_{French}$.

This then looks like an instance of a 'retreat to the unmarked' by way of reranking cloned faithfulness constraints for loanwords lower than native faithfulness constraints. In this way, loanwords are actually more unmarked than native words, though because of the ranking of native faithfulness over these markedness constraints, there is also a TETU effect, in which we don't see direct evidence of these markedness constraints within the native vocabulary (other than, perhaps through reduplication and lexical frequency, as mentioned above).

5 Conclusion

The first goal of this paper has been to formalize the tone assignment strategies of French loanwords in Vietnamese, described by Barker (1969), within an OT framework. This was done by

introducing a general constraint requiring all syllables to be assigned a tone, alongside constraints for *huyền* assignment in bisyllabic loans, as well as general structural constraints that are required independently for native vocabulary.

The second goal was to show that the 'retreat to the unmarked' effect could be accounted for by indexing loanwords to cloned faithfulness constraints, which are ranked below the relevant markedness constraints. What was not addressed in this paper, but has important bearing on these faithfulness rankings, is looking at segmental and syllabic flexibility in loanwords, where forms illegal in native words are allowed: for example the existence of word-initial /p/. This may create a paradox in which we want STRUC to dominate FAITH_{French} to account for things like syllabic structure (notably deletion and epenthesis in consonant clusters), while simultaneously having the opposite ordering to account for things such as word-initial /p/.

FAITH_{French} » STRUC is additionally problematic, because it would result in the constraint(s) pertaining to word-initial /p/ also being dominated by FAITH_{Viet}. We would then need to either stipulate that Vietnamese simply has no underlying forms with word-initial /p/, or that the markedness constraint(s) regulating that are also cloned and indexed to native and foreign words. This is indeed the direction that Jurgec (2010) takes to account for Slovenian, and may prove fruitful for future work in Vietnamese as well.

An additional, and perhaps more significant question that arises is constraint learnability. Establishing a three-level tone system for my analysis of Barker's bisyllabic generalization was founded upon *nặng, hỏi* and *ngã* being grouped together as complex tones based on contour and voicing. While Brunelle (2009) does demonstrate that Vietnamese speakers distinguish tones based on these features, his geometry for both North and South Vietnamese speakers is considerably more complex than a simple vs. complex tone dichotomy, with neither dialects having branches that clearly separate what I have been calling complex and simple tones. If that is the case, we must ask if an analysis that requires native speakers to rebuild a tone-feature geometry for the sake of assigning tone to loanwords is a viable one; it may be if we consider tone perception not with regard to native tones, but rather with regard to perceiving/assigning prominence in non-native forms and their repairs.

Generally speaking, though, a larger learnability problem is that all of the constraints required for the bisyllabic exceptions analysis make reference to syllabic feet. As far as I know, there is no independent evidence that Vietnamese makes use of syllabic feet anywhere else in the language. The question, then, is how native speakers ever learn these constraints in the first place in order to repair non-native forms. The repair strategy seems to be making use of constraints which are completely dormant otherwise in the native language, which is an odd thing to stipulate. However, without any other way to motivate the assignment of *huyên* in loans, the current analysis is a viable interim one, and is, as always, contingent on gathering more data, especially loans from stress/tone languages that may be more revealing in the interaction between Vietnamese tone assignment and prominence.

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