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STRATEGIES IN LOAN PHONOLOGY¹

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1. Introduction

Hyman (1970) maintains that, "Foreign sounds are perceived in terms of underlying forms" of the borrowing language, thereby denying the role of phonetics in loan phonology. According to him the phonology of the borrowing language is the sole determinant factor involved. Furthermore, in the Chomsky and Halle (1968) system phonological considerations are exclusively articulatory (except for one feature - [strident]).

The purpose of this paper is to suggest that phonetics does indeed play a role and that there are many other considerations that are employed in loan phonology. These could be phonological, acoustic, articulatory, and even social. Finally, it will be shown that loan phonology may sometimes be used to resolve some problems that may not be easily determined purely on internal synchronic evidence.

2. "Hyman's Paradox"

In rejecting phonetic conditioning in loan phonology, Hyman wonders why the same segment (eg: English /θ/) should be borrowed differently in different languages (eg: as /s/ in French and Haya and as /t/ in Serbo-Croatian.). He prefers to account for this phenomenon through the phonological systems of the respective languages rather than their phonetics. He also argues that if phonetic approximation was the cause, then different speakers would go in different directions in nativising the loan words. I would like to argue (in line with Lovins, 1973) that in fact the very arguments that Hyman uses in rejecting phonetic conditioning are the very ones that are followed in loan phonology.

Lovins (1974:242) states, "Perception of the 'closest sound' in another language occurs in terms of phonological processes, not binary features: features are not perceptual primes." If this were true then features would have no psychological reality. Indeed, cases like the borrowing of English /θ/ as /t/ in Serbo-Croatian and as /s/ in French and Haya are due to the fact that different languages put greater significance on certain features than on others and it is this kind of difference that accounts for this diversity. Thus, for the French in this case it is the shared

marking for the feature [continuant] (the fact that θ and s are both [+cont.]) that counts while for Serbo-Croatian it is the shared marking for the feature [strident] (the fact that both θ and t are [-strident]). It is this very reason that makes the French say "— — — it is like our s " and Serbo-Croatians say "— — — it is like our t " (Hyman p. 11n). This demonstrates that it is the perception of the features in the native languages that counts in such cases. In Haya the English and Swahili / θ / and / β / are borrowed as / s / and / z / respectively--for the same reason as outlined above and demonstrated in #1 below:

1. SW.	θ amaani	esama ^h ani	'value'
ENG.	something	esa ^h amusingi	
SW.	β ambi	ezambi	'sin'
SW.	fe δ a	efe δ za	'silver/money'

Haya does not have / v / either. A borrowed / v / gets changed to / b / although it is sometimes realised as [bw]. The significance of the latter will be discussed later.

2. SW.	vitunguu	ebit ^u ngulu	'onions'
SW.	viungo	ebilungo	'spices'
ENG.	silver	esilibwa	

What counts in this case is the fact that both sounds (b and v) share the features [labial] and [voice] : / b / being the only voiced oral labial consonant in Haya. And this is probably also due to the fact that Haya does not have a bilabial fricative. If it did probably the feature [continuant] would have prevailed as for the dentals.

This kind of analysis -- based in the feature matrices -- accounts for Haya students of French describing the French high front round vowel / y / as "some kind of 'juu'" (describing it as if it was the high back vowel 'u'). This means that to them it is the feature [round] that counts in their perception of this vowel. At the moment there are no detected cases of borrowing by Haya from French. Probably, a word like / syr / would be borrowed as [sur] (ignoring for the time being what would happen to r). On the other hand for speakers of another language, the feature [back] would count more perceptually than [round]. For these speakers it would be reasonable to speculate that they would describe the same French vowel as "some kind of 'ii'", the high front non-round vowel. For them, then, the word / syr / would be borrowed as [si].

This means that different languages treat 'same'

sounds differently. If two languages both have the sound /t/ two things are possible. First, the two sounds might be audibly different, eg: the English t being alveolar and the Italian dental. Secondly, even though the two sounds may not necessarily be audibly different their perception by the respective speakers might be different -- different features being more salient for speakers of different languages. It is this fact that accounts for the fact that two languages may borrow a given sound from a third language differently.

3. Noun Morphology

In Haya the nouns belong to classes -- classes 1 and 2 being human, 9 and 10 animal, and all the rest inanimate. All non-human nouns borrowed into Haya belong to classes 9 and 10.

Nouns are of the structure pre-prefix+prefix+noun-stem. The prefix is determined by class membership of the noun and has the structure CV. The only vowels that occur in the prefix are i, u and a. The pre-prefix is always a single non-high vowel V the quality of which is predictable from the vowel of the prefix:

3.	<u>pre-prefix</u>	<u>prefix</u>
	e	i
	o	u
	a	a

However, the classes 9/10 prefixes are comprised of a homorganic nasal only (without a vowel) and the pre-prefix is e. It might be reasonable to argue that underlying the class 9/10 prefix has i which conditions the e and then gets deleted. However, borrowed nouns do not have the prefix but still have the e pre-prefix, as the examples in #4 below show:

4.	eshágamma	'blood'	Luganda
	edúúka	'a shop'	Swahili
	emótoka	'a motor car'	English
	esimu	'a telephone'	Swahili

Under the circumstances it does not look reasonable to posit an underlying whole Ci prefix that gets deleted after conditioning the pre-prefix. It might be necessary to take the concrete view and say that in borrowed cases the pre-prefix is morphologically conditioned. In fact it might even be worthwhile to extend the notion to all of them: the pre-prefix is morphologically conditioned. If this view is adopted #3 will be modified to #5.

5.	<u>pre-prefix</u>	<u>prefix</u>
	e	i, N, Ø
	o	u
	a	a

If the borrowed nouns do not have prefixes, how do we tell that they are really in class 9/10? This problem is resolved by examining the effect these nouns have on other forms in sentences. Demonstratives will be used to illustrate this phenomenon:

6.			
(a)	Class 7 (non-borrowed)	e-ki-ntu	e-ki 'this thing'
	Class 8 (" ")	e-bi-ntu	e-bi 'these things'
(b)	Class 9 (" ")	e-n-jubu	e-gi 'this hippo'
	Class 10 (" ")	e-n-jubu	e-zi 'these hippos'
(c)	Class 9 (borrowed)	e-Ø-duuka	e-gi 'this shop'
	Class 10 (")	e-Ø-duuka	e-zi 'these shops'

It will be observed that realizations on demonstratives is the same in both (b) and (c) irrespective of whether nouns are borrowed or not. It is this fact that groups them together.

One question must be answered: Why does Haya put all its borrowed non-human nouns into classes 9/10 (together with animals)? One possibility could be due to the fact that speakers might be demoting incoming loans and the way to show this is by grouping them together with animals. This "demoting" explanation cannot be used to explain why French has its borrowed nouns in the masculine gender. It seems that Anttila's (1972) indifferent account of this is appropriate. Anttila says that these kinds of "---alignments are often impossible to predict though the language may have set morphological classes where loanwords are accommodated."

Anttila goes on to say, "Often the gender of the lending language is retained". This notion should be carefully examined. In many languages "gender" normally refers to the masculine/feminine opposition. However, in Bantu languages gender means the singular/plural pairs of classes (eg: classes 1 and 2 are one gender--singular and plural: human, and 9 and 10 are another gender--singular and plural: animal). Thus for Anttila's observation to hold it must be restated: the gender is retained if the lending and the borrowing languages are similar. This explains why Swahili borrowings into Haya retain their gender as shown in #7 below:

7.	SWAHILI	HAYA	
	5 tunda	eitúnda	'fruit'
	6 matunda	amatúnda	'fruits'
	3 mnada	omunaada	'auction'
	4 minada	eminaada	'auctions'

SWAHILI	HAYA	
1 mreno	omuréeño	'a Portuguese'
2 wareno	abareéeño	'Portuguese' (pl.)

This kind of distinction should not be expected to hold where Swahili or Haya borrows from English or vice versa. However, it should be remembered that although languages try to make loan words conform to their already existing structures (phonological, etc.), they also try to maintain the structure of the incoming loans as much as possible. The latter constraint might be the motivation for putting all these nouns into the 9/10 gender in one case and allowing others to maintain their gender in the other. First, nouns in this gender retain the same prefix form on the noun for singular and plural. (See Appendix 1 of Byarushengo and Tenenbaum in this volume). Secondly, the language goes further and refuses to add the prefix to these borrowed nouns (only the pre-prefix). The end result of both of these is that the structure of the noun is retained as much as possible (except for internal adjustments that might be made).

4. Syllable Structure

The preferred syllable structure in Haya is CV. The only consonant clusters allowed are those where a nasal precedes a homorganic consonant and/or a glide follows a consonant. Borrowed words that contain an unacceptable consonant sequence get modified. Most of these words would be those that are of the structure fricative-stop-liquid, those that are stop-syllabic liquid, and those that end in consonants. The examples in #8 below illustrate what happens:

8.	ENG.	HAYA
a)	spray	esipurei
b)	hospital	ehosipito
c)	bicycle	ebáísiko
d)	stamp (postage)	esitámpu
e)	shirt	esááti
f)	goal-keeper	golikípa
g)	soup	esúpu
h)	nib	enibu
i)	pilot	omupáíloti
j)	screw	esikuruú

These examples indicate that in most cases the vowel *i* is inserted. This vowel is chosen probably due to the fact that it is the closest vowel in the language.² Thus, using it inflicts the least amount of disruption on the original form of the loan word--thereby allowing the word to maintain as much of its original form as can

possibly be allowed.

Two other methods are employed in removing unacceptable consonant clusters. It will be noticed that in examples a, d, g and h the vowel u is used instead of i. This only happens when the preceding consonant is grave. The vowel u is grave too. Thus, the quality of the consonant in these cases determines the vowel -- the one with which they are similar.³

However, if the word ends in a syllabic liquid the latter gets replaced by the vowel o. This process is attested too in the diachronic development of Serbo-Croatian. It is due to the fact that syllabic l and o have similar formant structures (Ed Purcell, personal communication).⁴ This means that they sound alike -- a case where a sound in the donor language (a consonant) is replaced by one that sounds like it in the borrowing language (a vowel).

The constraint against consonant clusters of the form fricative-stop, stop-liquid and fricative-stop-liquid is both a MSC (Stanley, 1967) and an SPC (Shibatani, 1973). However, the requirement that consonants should not occur in final position is only an SPC since verb stems in Haya end in consonants. The situation in Haya is like that in Japanese as stated by Shibatani, "--- stems ending in consonants take suffixes ending in vowels" (p. 87). This prevents the possibility of realizing a consonant in final position on the surface. It should be noticed, however, that neither of the above requirements is only a MSC. Thus this confirms Johns' view that, "In fact it would seem that a language's ability to borrow words is at least largely determined by the shapes permitted at the surface level." (1969: 377--quoted in Shibatani p. 99).

What is interesting about all this is the fact that the strategies employed in removing clusters are phonetic even though the motivation (to maintain the CV structure) is phonological. As Shibatani (p. 97) stresses "--- the more plausible hypothesis is that a loan word tends to be modified according to the SPC's of a borrowing language". In fact he goes further (personal communication) to suggest that it is only those rules that have direct connection with SPC's that act on loan words. This means that we should separate the cause from the means -- motivation from strategy. It will be observed that all of the three processes above have one aim in common -- to convert an unacceptable sequence (a consonant cluster) to one that is acceptable: a CV structure. All three rules are in conspiracy to maintain that structure. Although they are different from each other in terms of the structures to which they apply they are all explained phonetically.

5. Tone Placement

In Haya, there are two important tonal phenomena.

First, the final syllable is never prominent (it never gets either high or falling tone). Secondly, the penultimate syllable before a pause is the preferred syllable for prominent tone. A framework that accounts for borrowing solely in phonological terms (MSC's and P-rules) would expect the high tone to occur on the penultimate syllable and never on the final. The latter is true: even in borrowed words the final syllable never acquires prominent tone. This is a phonological constraint (and a strong one too). However, in most cases the prominent syllable in the donor language (the stressed syllable) remains the prominent syllable when the word is borrowed into Haya, as the examples in #9 below will show. Thus the prominent syllable remains the one from which prominence is first heard from the donor language. This is further evidence of phonetic conditioning.

9.	ENG.	HAYA
	pīlōt	omupāfloti
	mōtor-car	emōtoka
	hōspital	ehōsipito
	bīcycle	ebāisiko

The last two forms have alternate pronunciations as shown below.

10.	ehosipitāli
	ebaisikéli

This is because the alternative forms are borrowed via Swahili. It further shows that tone placement in loanwords in Haya is mainly phonetically conditioned -- because in Swahili prominence (stress) always falls on the penultimate syllable. (It will be seen that Swahili treats borrowing differently than Haya -- in the way it breaks clusters and insisting on making the penultimate syllable prominent).

6. Rule Reversal - Sequential Constraints

In Haya p and d occur only when preceded by a nasal. Otherwise they are realized as h and l respectively in other environments. These pose a problem in determining which one of each pair should be taken as being basic (underlying). There are two considerations that were taken into account in Byarushengo (1975). First, p and d are the historic forms: Proto-Bantu is assumed to have had these stops that became the respective non-stops. Secondly, there was a need to attain symmetry in stops: matching each voiced stop with a voiceless counterpart and vice versa. At that point borrowings were ignored and there were no processes which could help resolve the

problem. The stops were, therefore, taken as being underlying. Thus these rules were proposed:

11. a) $p \rightarrow h / [\sim N] \text{---}$ i.e., \underline{p} and \underline{d} became \underline{h} and
 b) $d \rightarrow l / [\sim N] \text{---}$ \underline{l} respectively if they
 were not preceded by N.

This worked in so far as we were considering historical Haya forms only. However, if these rules were productive we should have expected borrowed \underline{p} and \underline{d} that did not meet the above requirements to become \underline{h} and \underline{l} . But this does not happen, as the examples in #12 show:

12.			HAYA	
	SW	pilipili	epilipili	'pepper'
	ENG	pin	epini	
	SW	duuka	eduuka	'shop'
	ENG	radio	eredio	

However, borrowed \underline{h} and \underline{l} change to \underline{p} and \underline{l} after a nasal as shown in #13 below:

13.			HAYA	
	SW	andika	handika	'write'
			mpandika	'I write'
	SW	hesimu	hesimu	'obey'
			mpesimu	'obey me'
	SW	laumu	laumu	'blame'
			ndaumu	'I blame'

This observation indicates three significant points. First, to have a productive rule the existing rule should be reversed:

14. a) $h \rightarrow p / N \text{---}$ i.e., \underline{h} and \underline{l} become \underline{p} and
 b) $l \rightarrow d / N \text{---}$ \underline{d} after a nasal.

Formulated this way both historical and borrowed forms are accounted for without exception. The new rule is more productive than the older one.

Secondly, it will now be noticed that new "phonemes" have been created: \underline{l} and \underline{h} . Equally important is how these "phonemes" have been created. A comparison of the treatment of the dental and labial fricatives on the one hand and these stops will show a strategy by which new "phonemes" are acquired in a language -- by splitting the bundle of allophones of an already existing "phoneme" rather than by acquiring a completely new sound that is not found in the language even at the phonetic level. This agrees with Shibatani's observation that "--- bringing in a new segment costs more than dealing with

already existing segments ---" (p. 104).

The third observation relates to Lovin's (1974:243) view that, "Sounds are perceived sequentially, not individually; in relation to context-sensitive process": the view also strongly held by Hyman. What this Haya phenomenon shows is that this is not always so; otherwise these stops would not have been accepted in the environment they occur in. In fact if this was a strong universal requirement there probably would not be any cases of rule reversals.

However, another assertion of Lovins (P.242), that: "Processes governing the phonological system of a language sometimes appear explicitly only in an interference situation" is demonstrated by these stops. It is this phenomenon that determines the form of the p-h and d-l rule and establishes h and l in the underlying representation. This way we get rid of the semi-ad-hoc solutions of Byarushengo (1975) quoted above -- and still maintain symmetry.

At this point we come back to what was observed with /v/ -- the fact that it is sometimes realized as b and sometimes as bw. This might mean that the voiced bilabial Haya stop has some salient characteristics that have yet to be uncovered.

7. Vowels - Social Constraint

Swahili, like Haya, has five vowels and the vowel systems of the two languages are almost identical. As a result, on borrowing from Swahili, no modifications are made on the vowels. The interesting situation is in borrowings from English -- as would be expected. English vowels are reduced, within the Haya system, as shown in 15 below.



One interesting observation is that there are no known cases of the same vowel being realized differently in different words. This situation contrasts with that in Japanese (Lovins, 1974: 241) where the same vowel might be borrowed differently. This might be further evidence that Haya is more phonetic oriented in its borrowing and less phonological.

There is one further interesting consideration. According to the illustration above the English word

manner should be realized in Haya as [mana] . However, this happens to be a taboo word. As a result the word is realized as [mena] : one of the vowels is purposely changed to make the word acceptable. This illustrates a case of institutional constraints on loan phonology-- or borrowing as a whole. Under the circumstances one can imagine the problem which priests and ministers have with the word manna. Some selected vowels are demonstrated in #16 below.

16.	<u>Vowel</u>	<u>English</u>	<u>Haya</u>
	i	green	gur <u>i</u> ni
	ɫ	pin	ep <u>i</u> ni
	e	desk	ed <u>e</u> siki
	æ	map	em <u>a</u> pu
	a:	pass	ep <u>a</u> si
	ə	singer	sing <u>a</u>
	ʌ	mudguard	mad <u>i</u> gadi
	ɔ	hospital	eh <u>o</u> sipito

8. Conclusions

Although some of my arguments are based on speculation I maintain that they are of theoretical validity. It should have been noticed by now that several factors interact in determining the direction of loan phonology: phonological, phonetic, social, etc. It is inappropriate then to attempt to account for borrowing through one and only one strategy. Furthermore, motivation and strategy should be separated. There are cases where loan phonology plays an important role in shedding more light on areas that would be difficult to understand clearly on the basis of purely internal evidence: this should be seen as the application of loan phonology.

9. Footnotes

1. I would like to express my gratitude to Larry Hyman and M. Shibatani for their invaluable comments on an earlier draft. Acknowledgements are also being extended to Ed Purcell for making it possible to understand some of the salient issues involved.
2. The vowel i is the most closed in the sense that high front vowels are actually higher than their back counter parts. It is possible, too, that this vowel is the shortest in the language. However, I intend to explore this possibility instrumentally.
3. Indeed u does occur before non grave consonants (as in tuma "send for") and i may also occur after grave consonants (as in kila "recover"). So the selection of these vowels is not due to any already existing consonant-vowel sequential constraints.
4. Further experimentation is intended to verify this, too.

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