

Conference Paper: Honours Research in Linguistics

## **An Optimality Theoretic Analysis of Chichewa Loan Words of Monolingual and Bilingual Speakers of Chichewa**

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### **Introduction**

Loan phonology has been the research basis for many linguists notably Kenstowicz<sup>1</sup> Neba, Chumbow and Tamanji<sup>2</sup>, Mathlaku<sup>3</sup> and Boersma, Dekkers and Van de Weijer<sup>4</sup>. Borrowing is considered an inevitable process considering the fact that many languages are in contact nowadays. It is a commonly held view that once a word is borrowed into a language it conforms to the phonology of the receptor language. If it does not conform, ‘repair’ strategies are applied in order to make it more like the Indigenous words. This phenomenon has been observed in works by Neba, Chumbow and Tamanji<sup>5</sup> for Bafut, Kom, Ngamambo, Yoruba, Kenyang, Ewondo, Mbu, Mankon Mokpe, Féfè; Sannasgal<sup>6</sup> (1976) and van de Weijer<sup>7</sup> (1996) for Sinhalese. Studies have not only described the phonology of loan words; several have analysed the data using the output-based theory of Optimality Theory (henceforth OT). It has been argued in such studies that indeed loan words conform to the constraint ranking of the receptor language. For the most part, markedness constraints seem to win over faithfulness constraints. Nevertheless, although it is commonly held that loan words strictly adapt to the phonology of the receptor language, this only happens to be the case with monolingual speakers of the language. Data from bilingual speakers tell a different story<sup>8</sup>. Bilingual speakers of English tend to be more faithful to the English words that serve as the input. In the process, markedness constraints that were formerly highly ranked in the language are demoted or faithfulness constraints are placed between the markedness constraints.

This research provides an Optimality Theoretic analysis of Chichewa loan words of monolingual and bilingual speakers. Chichewa is a Bantu language which

Guthrie codes as N31b. It is spoken in Malawi, parts of Zambia, Tanzania and Mozambique. It has borrowed words extensively from English, the official language of Malawi (and some of these other countries), since it has had contact with it for more than 100 years. From the data provided, it is argued that the two groups of speakers in certain cases show different types of grammars. The monolingual speakers seem to prefer to observe markedness constraints over faithfulness constraints and therefore loan words adapt to the constraint hierarchy of Chichewa. For the bilingual speakers the ranking of faithfulness constraints over markedness ones seems to be preferred in certain instances.

### **Methodology**

The data were collected in Zomba city in Malawi.

### **Sample**

Since the study set out to analyse Chichewa loan words from both monolingual and bilingual (in Chichewa and English) speakers of the language, respondents consisted of speakers from these groups. These respondents were chosen because of their native speaker competence and ability to supply relevant information concerning the topic in discussion. Data were also collected in such a manner in order to draw comparisons from the two groups of people upon which analyses could be made. Each group consisted of three respondents.

### **Method of data collection**

A group of items that have lexical representations borrowed from English were collected and displayed. These were physical items and therefore mainly nouns. Each speaker was then asked in Chichewa one at a time to mention the item. The words they uttered were then recorded and transcribed.

### **Method of data analysis**

This was done using the tenets of Prince and Smolensky's<sup>9</sup> Optimality Theory (overview to be presented in section 2.4). Using English words as the input,

several candidates were evaluated on constraint hierarchies in order to come up with the optimal candidates.

## Theoretical framework

### Overview of OT

The basic principles of the theory were developed by Prince and Smolensky<sup>10</sup> and McCarthy and Prince<sup>11</sup> and later revised and extended in numerous works, for instance Boersma et al<sup>12</sup> Archangeli<sup>13</sup>, Kager<sup>14</sup>, Prince and Smolensky<sup>15</sup> and McCarthy<sup>16</sup> among others.

OT proposes that Universal Grammar has violable constraints that are universal and are therefore part of all the natural languages. Every language ranks these constraints differently and the different ranking of the constraints is what makes languages different. Below are examples from Archangeli<sup>17</sup> considering how the constraint PEAK– which says that all syllables should have vowels– operates differently in different languages. The examples are from English and Berber. (Basic notation of OT are found in section 2.4)

### English

/l□mp-n□s/	FAITH V	PEAK	FAITH C	*COMPLEX
↻)l□mp.n□s				*
b) L□m.n□s			*!	
c) l□m.p)\.n□s	*!			
d) l□m.p.n□s		*!		

### Berber

/t-fsi/	FAITH V	*COMPLEX	FAITH C	PEAK
a) t-fsi		*!		*
b) _ .si			*!*	
c) _ f.si			*!*	*
d) t _ .si			*!*	*
e) tif.si				

g) tf.si			*
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Berber and English are different in that Berber ranks Peak low—that is why it can have a syllable without a vowel. This can be seen in the optimal candidate where peak is violated. English, however ranks Peak high and it is for this reason that violations of peak like candidate d) in the tableau are not accepted in the language. The optimal candidate in English satisfies peak and other constraints. (Note: The other constraints have been left unexplained because I wanted to highlight the differences in the ranking of peak between the two languages.)

Constraints can be basically grouped into two kinds namely Markedness constraints and Faithfulness constraints. Markedness and faithfulness constraints are always in conflict. Constraint ranking is the interaction between these two types of constraints. Markedness constraints require that output forms have ‘unmarked structures’. In other words they strive that output forms should meet certain well formedness criteria. Whereas faithfulness constraints are forces that preserve lexical contrasts. They require that output forms preserve the properties of their basic lexical forms. Since it has been mentioned that markedness and faithfulness constraints are always in conflict, this suggests that whenever a lexical contrast is preserved there is cost at a markedness constraint and when there are differences between input and output there is a violation of a faithfulness constraint. Grammars of a language regulate these conflicts in order to come up with the most ‘harmonic’ or ‘optimal’ candidate. Optimality as Kager<sup>18</sup> notes is ‘the status of being most harmonic with respect to a set of conflicting constraints’.

The theory proposes that conflicts of constraints are resolved by strict domination (to be explained further later in this section). Languages avoid violations of constraints but the avoidance of a violation of a higher ranked constraint is preferred than that of a lower ranked one. This means that higher ranked constraints take priority over lower ranked ones and the violation of a lower ranked constraint is done in order to satisfy a higher ranked one.

Finally unlike in classical generative phonology, in OT, no constraints refer exclusively to the input.

### Basic OT notations

- An asterisks (\*) stands for the violation of a constraint’;;
- An exclamation mark (!) means that the violation of the constraint is fatal and the output form is not accepted in the language.
- Columns bordered with breaks indicate that the ranking of the constraints in question is not crucial.
- Shaded rows shows that the violation of the constraints in the rows is irrelevant since a fatality or the optimality of a candidate has already been made on the basis of earlier constraints.
- $\Rightarrow$  shows that the candidate chosen is the optimal one.
- $>>$  indicates that a constraint ranks higher than the following constraint.

### Data Analysis

Since there were two groups of respondents (the monolinguals and the bilinguals), the data will be presented by looking at each group starting with the monolingual group for each observation.

### Cluster reduction

#### Monolinguals

In the loans words observed, (as commonly happens where L1 has CV syllable structure) the monolingual speakers of Chichewa inserted a vowel whenever the word in the input had a consonant cluster. This can be seen in the examples below:

Loan word	English	English gloss
a) <i>ba.si.ke.ti</i>	[bA:sk→t]	basket
b) <i>fi.fi.te</i>	[fIfiti]	fifty
c) <i>kologeti</i>	[k↔Ylgeit]	colget
d) <i>suwetala</i>	[swEt↔r]	sweater
e) <i>sipo/dZi</i>	[sp ∅ ndZ]	sponge

f) <i>supuni</i>	[spu]n]	spoon
g) <i>fulasiki</i>	[flA]sk]	flask
h) <i>buledi</i>	[brEd]	bread
i) <i>bulangete</i>	[blaNkIt]	blanket
j) <i>golobo</i>	[gl↔Yb]	globe
k) <i>batile</i>	[batri]	battery
l) <i>kilala</i>	[klE]r↔]	Clara (name of a person)
m) <i>aginesi</i>	[agnEs]	Agnes (name of a person)

As observed above, for instance in the words *sipo/dZi*, *golobo* and *buledi*, their input structures had CC clusters but the vowels /i/, /o/, and /u/ have been inserted in them in order to break the clusters.

In an OT analysis, the following are the relevant constraints:

**ALIGN - L**

The left edge of the grammatical word coincides with the left edge of the prosodic word.

**ALIGN - R**

The right edge of the grammatical word coincides with the right edge of the syllable

**\*COMPLEX<sup>ons</sup>**

No consonant clusters in onset position

**MAX – IO**

Input segments must have output correspondents. (‘No deletion’)

**DEP – IO**

Output segments must have input correspondents (‘No insertion’)

The data show that the ranking of these constraints is as follows:

\*COMPLEX<sup>ons</sup>, MAX-IO>>DEP- IO, ALIGN - L, ALIGN – R

This is presented in the tableau below:

sII.p↔rz	<b>*COMPLEX<sup>ons</sup></b>	<b>MAX-IO</b>	<b>DEP-IO</b>	<b>ALIGN-L</b>	<b>ALIGN-R</b>
a) sli.paz	*!				
b) ɕi.li.pa.si			**	*	*
c) si.paz		*!		*	
flA sk	<b>*COMPLEX<sup>ons</sup></b>	<b>MAX-IO</b>	<b>DEP-IO</b>	<b>ALIGN-L</b>	<b>ALIGN-R</b>
d) fask		*!		*	
e) flAsk	*!				
f) ɕu.la.si.ki			***	**	*
brEd	<b>*COMPLEX<sup>ons</sup></b>	<b>MAX-IO</b>	<b>DEP-IO</b>	<b>ALIGN-L</b>	<b>ALIGN-R</b>
g) bred	*!				
h) ɕbu.le.di			**	*	*
i) bed		*!		*	
klE r↔	<b>*COMPLEX<sup>ons</sup></b>	<b>MAX-IO</b>	<b>DEP-IO</b>	<b>ALIGN-L</b>	<b>ALIGN-R</b>
j) klE r↔	*!				
k) ɕi.la.la			*	*	
l) kera		*!		*	
agnEs					
m) agnEs	*!				
n) ɕa.gi.ne.si			**	*	*
o) anes		*!		*	

In the tableau above, for the input / sII.p↔rz /, candidate a) is ruled out because it violates the highly ranked constraint \*COMPLEX<sup>ons</sup>, c)'s violation of MAX-IO is fatal because MAX – IO is also a high ranking constraint. b) is the optimal candidate even though it violates DEP – IO twice and ALIGN – L and ALIGN – R. This is because these constraints are ranked low in the constraint hierarchy.

The same violations are noted for the candidates with inputs [flθsk] and [bred], [klera], [agnEs].

### Bilinguals

The data from the bilingual speakers display a different situation. While for the monolingual speakers consonant clusters were reduced by the insertion of a vowel, the bilinguals kept the clusters the same way they were in the input. This means there is a re-ranking of constraints. For the bilinguals, the faithfulness constraint ALIGN - L becomes the highest ranking constraint. The constraint ranking therefore becomes as follows:

Align L >> MAX-IO >> DEP - IO, ALIGN-R, \*COMPLEX ONSET

The data is presented below and the tableau follows:

<b>Loan word</b>	<b>English</b>	<b>English gloss</b>
a) <i>basketi</i>	[bA:sk→t]	basket
b) <i>fifte</i>	[fifti]	fifty
c) <i>kolgeti</i>	[k↔Ylgeit]	colget
d) <i>spo/dZi</i>	[sp ø ndZ]	sponge
e) <i>spuni</i>	[spu  n]	spoon
f) <i>flaski</i>	[flA]sk]	flask
g) <i>breDi</i>	[brEd]	bread
h) <i>blangete</i>	[blaNkIt]	blanket
i) <i>globo</i>	[gl↔Yb]	globe
j) <i>batile</i>	[batri]	battery
k) <i>klara</i>	[kle]rə]	Clara (name of a person)
l) <i>agnesi</i>	[agn□s	Agnes (name of a person)

sli.p↔rz	<b>ALIGN - L</b>	<b>MAX- IO</b>	<b>DEP- IO</b>	<b>ALIGN- R</b>	<b>*COMPLEX ons</b>
a) ɕʃli.pazi			*		*
b) si.li.pa.si	*!		**	*	
c) si.paz	*!	*			

flA]sk	<b>ALIGN - L</b>	<b>MAX- IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>	<b>*COMPLEX ons</b>
d) flask	*!	*			
e) ↵flaski			*		*
f) fu.la.si.ki	**!		***	*	
brEd	<b>ALIGN- L</b>	<b>MAX - IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>	<b>*COMPLEX ons</b>
g) ↵ bredi			*		*
h) bu.le.di	*!		**	*	
i) bed	*!	*			
agn□s					
j) ↵ agnesi					*
k) a.gi.ne.si	*!		**	*	
l) an□s	*!	*			
kle]rə					
m) ↵klara					*
n) kilala	*!		*		
o) kara	*!	*			

The markedness constraint  $*\text{COMPLEX}_{\text{ONSET}}$  which was a highly ranked constraint for the monolinguals has been demoted and the  $\text{ALIGN} - \text{L}$  which was one of the lowest ranking constraints has been promoted to become the highest one. Candidates a), e) and g) are optimal even though they violate  $*\text{COMPLEX}_{\text{ONS}}$ . This is because the constraint is a low ranking one. b), f), and h) lose because they violate the highest ranking constraint  $\text{ALIGN} - \text{L}$ . The same is true with c), d) and i).

### No Coda

In both the monolingual and bilingual data, there is strict adherence for syllables to be open and if an input form has a coda, an epenthetic vowel is inserted in order to correct it. Consider the examples below.

**Loan word by monolingual****Loan word by bilingual****English**

<i>fo.lo.ko</i>	fo.lo.ko	[fɔ̃]k]
<i>te.ni</i>	te.ni	[tEn]
<i>fo.ni</i>	fo.ni	[f↔Yn]
<i>su.pu.ni</i>	spu.ni	[spun]
<i>ka.bi.τΣi</i>	kabitΣi	[kabIdZ]
<i>ka.pu</i>	ka.pu	[kap]

It is observed in the data that where a syllable ends in a coda, a vowel is inserted to simplify the syllable. For example, the words /kæp/ (cup) and *spu]n* (spoon) both end in codas. However, the vowels /u/ and /i/ are inserted to make the syllables codaless.

This tendency illustrates that there is interaction amongst the following constraints:

**\*NO CODA**

Syllables are open

**DEP-IO**, **MAX-IO** and **ALIGN-R** (whose specifications have already been indicated above)

The ranking of the constraints is as follows:

NO – CODA, MAX – IO>>DEP-IO, ALIGN – R

The tableau for this ranking is outlined below:

**Monolinguals**

tEn	<b>NO CODA</b>	<b>MAX - IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>
a) te		*!		*
b) tEn	*!			
c) tɛni			*	*
f↔Yn	<b>NO CODA</b>	<b>MAX - IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>
d) fo		*!		*

e) fon	*!			
f) $\varphi$ oni			*	*
spun	<b>NO CODA</b>	<b>MAX - IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>
g) spu		*!		*
h) spun	*!			
$i \Rightarrow$ supuni			**	*

### Bilinguals

tEn	<b>NO CODA</b>	<b>MAX - IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>
a) te		*!		*
b) tEn	*!			
c) $\varphi$ teni			*	*
$f \leftrightarrow$ Yn	<b>NO CODA</b>	<b>MAX - IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>
d) fo		*!		*
e) fon	*!			
f) $\varphi$ foni				
spun	<b>NO CODA</b>	<b>MAX - IO</b>	<b>DEP - IO</b>	<b>ALIGN - R</b>
g) spu		*!		*
h) spun	*!			
i) $\varphi$ spuni			*	*

Candidates c), f) and i) are the optimal candidates for they do not violate the highest ranking constraints namely NO CODA and MAX – IO. All other candidates lose because they violate one of these constraints.

### Realisation of the sound /r/

The monolingual data shows that speakers tended to replace the sound /r/ with the lateral /l/. Consider the examples below:

<b>Loan word by monolingual speaker</b>	<b>English word</b>
<i>kolona</i> (catholic item)	[k↔r↔Yn↔r]
<i>batile</i>	[batri]
<i>buledi</i>	[brEd]
<i>limu</i>	[rIm]
<i>tisbulesi</i>	[tu]θ br ∅ Σ]
<i>ailoni</i>	[∅ I↔n] <sup>1</sup>

These phenomena can be explained by the following constraints:

**IDENT – IO (manner)**

Segments in the input must have the same specifications for manner in the output.

**[\*rhotic]**

Segments must not have the feature rhotic

**[\*lat]**

Segments must not have the feature lateral

The constraints are crucially ranked in the following manner:

[\*rhotic]>>IDENT-IO (manner)>>[\*lat]

This is presented in the tableau below:

rIm	[*rhotic]	IDENT-IO (manner)	[*lat]
a) rIm	*!		
↔ b)limu		*	*
brEd	[*rhotic]	IDENT-IO (manner)	[*lat]
c) brEd	*!		
↔ d)buledi		*	*
batri	[*rhotic]	IDENT-IO	[*lat]

<sup>1</sup> The speakers seem to have a spelling form of English as the underlying the form. That is why the monlinguals replace the /r/ sound for /l/ and the bilinguals have the sound /r/ in their output form.

		<b>(manner)</b>	
e) batre	*!		
⇒f) batile		*	*

Candidates a), c), and e) have not been selected as optimal candidates because they violate the highest ranking constraint in the tableau which disallows rhotics. Candidates b), d) and f) are optimal because the constraints they violate are lower in the hierarchy.

### Bilinguals

The bilingual speakers are faithful to the input in terms of this segment. In other words the /r/ sound remains as such. Observe the following data which illustrate this point.

#### Loan word by bilingual

#### English word

*bre*di

brEd

*korona*

k↔r↔Yn↔r

*tuθbra*Σi

tu]θbr ∅Σ

This suggests that the constraints posited above have now been re ranked as follows:

IDENT-IO (place)>>[\*rhotic], [\*lat]

[\*rhotic] which was the highest ranking constraint for the monolinguals has been demoted and IDENT-IO has been promoted to become the highest ranking constraint. The tableau below illustrates this.

rIm	<b>IDENT-IO (manner)</b>	<b>[*rhotic]</b>	<b>[*lat]</b>
a) ⇐rimu		*	
b) limu	*!		*
brEd	<b>IDENT-IO (manner)</b>	<b>[*trill]</b>	<b>[*lat]</b>
⇒c) bredi		*	

d) buledi	*!		*
batri	<b>IDENT-IO (manner)</b>	<b>[*trill]</b>	<b>[*lat]</b>
e) $\square$ batre		*	
f) batile	*!		*

Candidates a), c) and e) are selected as the optimal candidates in this case because they only violate one constraint [\*rhotic] which happens not to be the highest ranking constraint. While b), d) and f) violate [\*lat] and more importantly violate the highest ranking constraint (IDENT – IO (place)). This makes the violation fatal and as such the candidates fail to be chosen as optimal.

### Realisation of interdental

#### Monolinguals

The monolingual speakers replace the interdental /θ/ and /Δ/, for other sounds.

This can be observed in the data below:

Loan word	English word
bafa tawulo	ba]θ t <sup>h</sup> aY↔l
tisbulesi	tu]θbr ϕΣ
fili	θri
sauzande	θauz↔nd

Note that [T] can be changed to either /f/ <sup>2</sup> or /s/. However, this study did not find enough data to validate any further claims into the analyses. All that is important at the moment therefore is that the interdentals are replaced.

This is a result of the interaction between the faithfulness and markedness constraints below:

#### \*Interdental

No interdental sounds

#### IDENT-IO (place)

<sup>2</sup> Cockney English and possible early ‘Natal’ English had baf and not bath.

Place specifications in the input must correspond to place specifications in the output.

For these speakers, the constraints have the following rankings:

[\*Interdental]>>IDENT-IO (place)

(Note: The other constraints discussed above have been deliberately left out because they are not crucial to the argument presented here.).

This presented in the tableau below:

ba]θ t <sup>h</sup> aY ↔ l	<b>[*interdental]</b>	<b>IDENT-IO (place)</b>
a) ⇨ bafa tawulo		*
b) bθθ t <sup>h</sup> aw ↔ l	*!	
θri	<b>[*interdental]</b>	<b>IDENT-IO (place)</b>
c) ⇨ fili		*
d) θri	*!	

Candidates a) and c) are the optimal candidates for they violate IDENT – IO (place) which is the lowest ranking constraint. Since [\*interdental] is the highest ranking constraint in the hierarchy, its violation is fatal. This makes candidates b) and d) not to be chosen as the optimal candidates.

### Bilinguals

The bilingual speakers treat these segments differently for they choose to remain faithful to their input forms. Consider the data below:

#### Loan word by bilingual

bθθ t<sup>h</sup>aw ↔ l

θri

tuθbraΣi

#### English word

ba]θ t<sup>h</sup>aY ↔ l

θri

tu]θbr ø Σ

Since these forms are faithful to their inputs, it means that the constraints have to be reranked in the manner presented below:

IDENT – IO (place)>> [\*interdental].

This is presented in the tableau below:

ba]θ t <sup>h</sup> aY↔l	<b>IDENT- IO (place)</b>	<b>[*interdental]</b>
a) bafa tawulo	*!	
b) ↷baθ t <sup>h</sup> awelo		*
θri	<b>IDENT- IO (place)</b>	<b>[*interdental]</b>
c) fili	*!	
d) ↷θri		*

By not being faithful to the place specifications of their input segments, candidates a) and c) are ruled out as optimal candidates because they violate IDENT – IO (place) which is the highest ranking constraint. Even though b) and d) violate [\*interdental], they are optimal because they avoid the violation of the higher ranked constraint (IDENT – IO (place)).

### Discussion and Conclusion

Work by Mtenje<sup>19</sup>, Moto<sup>20</sup>, Mchombo<sup>21</sup>, among others, on the phonetic inventory and syllable structure has shown that Chichewa has simple vowels and simple syllables. Work on English has shown that the language allows codas, complex onsets and complex vowels. This means that Chichewa, unlike English, is a language that ranks markedness constraints over faithfulness constraints.

Research on loan phonology reported by Gussenhoven<sup>22</sup>, Yip<sup>23</sup> and Kager<sup>24</sup> has shown that when a word in a language is borrowed it follows the constraint hierarchy of the borrowing language. Furthermore, as noted by Neba et al<sup>25</sup> repair strategies are employed if a loan word does not conform to the phonology of the borrowing language. This is what happens with Chichewa monolingual speakers. They have inserted vowels to ensure that all syllables are simple and that they have no coda. Research has also shown that Chichewa does not have the rhotic sound /r/ and the interdental sounds **th** and **th**. It is for this reason that these sounds are replaced by /l/, /f/ or /s/ respectively in the data.

The bilingual speakers, however, seem to show a different grammar in which there is a merger between elements of Chichewa grammar and English grammar, on account of the contact that these languages have had. This has led to some markedness constraints which are highly ranked in monolingual speech being demoted. This has been seen in the bilinguals preservation of clusters, rhotics and interdental. However, there are some markedness constraints that can never be violated and they remain ranked high in the bilingual speech. This has been observed in the adherence of the NO CODA constraint.

### Conclusion

This research has analysed Chichewa loan words in monolingual and bilingual speakers and has shown that the former tend to analyse words on the basis of a constraint hierarchy of Chichewa phonology thereby showing strict adherence to markedness constraints over faithfulness. Conversely, when bilingual speakers encounter certain input forms (for instance those with clusters, interdental sounds and rhotics) they show a tendency to re-rank constraints by demoting those which were formerly ranked highly in the monolingual constraint hierarchy. This generally results in the avoidance of the violation of certain faithfulness constraints which are now ranked above markedness constraints. However, it has also been observed that certain markedness constraints cannot be violated in bilingual speech and these include \*No Coda. This seems to suggest that bilingual speakers have a grammar that merges certain aspects of Chichewa grammar and English grammar<sup>26</sup>.

### Notes

<sup>1</sup> M. Kenstowicz. *The phonetics and phonology of Korean loanword adaptation*. Paper presented First European Conference on Korean Linguistics, Leiden University, 2005.

<sup>2</sup> A. Neba, B. Ayu'nwi, S. Chumbouw, P. Tamanji. *Towards the Universals of Loan Adaptation: The Case of Cameroonian Languages*. Pre-published version for African Linguistics and the Development of African Communities, 2006

<sup>3</sup> K. Mathlaku. "Nativisation of Setswana loanwords: Evidence of Constraint Demotion" Paper presented at the Bantu Phonology Conference: University of Gothenburg, 2007

<sup>4</sup> P. Boersma, J. Dekkers and J. van de Weijer. "Optimality Theory: Phonology, Syntax, and Acquisition" in J Dekkers, F. van der Leeuw and J. van der Weijer *Optimality Theory: Phonology, Syntax and Acquisition* (Oxford: Oxford University Press, 2000) pp 1-25

<sup>5</sup> A. Neba, B. Ayu'nwi, S. Chumbouw, P. Tamanji, 2006

<sup>6</sup> Sannasgal in Boersma et al, 2000.

- <sup>7</sup> Van der Weijer in Boersma et al, 2000
- <sup>8</sup> c.f. Mathlaku, 2007
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