

Initial Syllable Prominence in Moroccan Arabic Loanwords Adjustment

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Cet article examine le processus d'intégration prosodique qui affecte principalement la syllabe initiale d'une catégorie d'emprunts de l'arabe marocain utilisé dans tachelhit. Les changements que subissent ces mots sont principalement engendrés par trois mécanismes d'assimilation à savoir l'épenthèse de voyelle qui peut être aussi bien de nature phonologique que morphologique, le renforcement du schwa et la gemination de la coda de la syllabe initiale. Ces ajustements, généralement étudiés dans le cadre de la phonologie des emprunts, sont prosodiquement significatifs dans la mesure où ils affectent principalement la syllabe initiale et conduisent alors à son accentuation. L'analyse des données dans cette étude est basée sur la théorie de l'optimalité qui considère l'adaptation des emprunts comme issue de l'application des contraintes Align et Parse ainsi que de leur classification.

1. Introduction

Loanword phonology is increasingly gaining interest and becoming an interesting area of phonological research given the cross language evidence and insights that it offers for phonological phenomena that may be opaque within one language system. Loanwords have often been taken as indicators of the active processes of the borrowing language. In fact, loanword phonology represents a source of insight into the structure of the borrowing language as it provides facts about the permitted and non-permitted structures and phonotactics as well as the active processes in the borrowing language. The process of borrowing needs to take into consideration three major factors as affecting the surface structure of these loanwords. First, the time at which these loanwords are borrowed affects their degree of integration. The further the time at which borrowing took place, the more integrated the loanword would be into the host language. Some old borrowings are even difficult to relate to an input form in the donor language. Second, the degree of bilingualism of the speakers of the borrowing language also affects the degree of integration of the loanwords, i.e. balanced bilinguals can produce items which preserve their input form. Third, the loanword form that is supposed to be input to borrowing can either be the surface phonetic form with all its phonetic details or a phonological form containing less surface features.

Loanwords are generally subject to two competing and conflicting tendencies. The first is dictated by the requirement of the borrowing language which consists in the need to adjust to the phonological structure of the host language. The second tendency refers to the universal requirements for loanwords to preserve their input form. The loanword is therefore required to adjust to the constraints and principles of the borrowing language system and at the same time to bear as much similarity to its native form as possible. The theoretical frameworks operating in loanword phonology try to account for these competing tendencies.

There are two major approaches in loanword phonology. The perceptual approach assumes that the borrowing language takes the phonetic form of loanwords as the input form, and that the users of this language have no access to the source language phonological system. (cf. Peperkamp 2002, Peperkamp & Dupoux 2003, Steriade 2001, Kenstowicz 2003a,b). Loanword adjustment is in fact a consequence of the misinterpretation of the phonetic form of the foreign word (cf. Miao, 2005)¹. The phonological approach considers that loanwords are adapted based on the rules and constraints of the borrowing language and not on the interpretation of the phonetic structure of the loan items (Hyman 1970, Kaye and Nykiel 1979, Singh 1987, Rose 1995, Paradis 1996, Paradis & LaCharité 1997, 2001, Ulrich 1997, Uffmann 2001, 2004). In the Theory of Constraints and Repair Strategies (TCRS), which is one of the phonological approaches; loanword adjustment is constrained by the cost of a repair strategy. When the preservation of a segment exceeds the threshold, it will be deleted as in the case where the segment doesn't occur in the inventory of the borrowing language or stands in an ill-formed phonotactic position.

MA loanwords represent a significant component of the Tashelhiyt lexical inventory. Tashelhiyt and MA have been in contact for many centuries. MA loanwords used in Tashelhiyt do not represent a homogeneous set, in the sense that these items undergo a gradual process of nativisation. In fact, these loanwords can be categorised into three types depending on the degree of integration into the phonological system of borrowing language. (i)The non-integrated loans, which preserve their original form; (ii) the semi-integrated loans, which undergo change at the level of their vocalic component; and (iii) the fully-integrated words which undergo both vocalic and consonantal change (cf. Marouane, 2005, 2009).

The present article investigates the process of integration of the semi-integrated words into the phonological system of Ait Swab Tashelhiyt (AST)². The changes undergone by these items are very significant in the sense that they affect mainly the initial syllable, which entails that these alternations are mainly prosodically motivated. These items undergo mainly a phonological and morphological process of [-a] insertion word initially or at the initial syllable. Some of the items undergo vowel glide alternation and gemination of the coda consonant of the initial syllable. These adjustment processes will be analysed within Optimality Theory which

¹ This approach is weakened by the fact that balanced bilingual speakers who are active in the borrowing process generally have access to the source language phonological system.

² Ayt Swab Tashelhiyt is spoken by Amazigh tribes living in the north western region of the Anti Atlas.

considers loanword adaptation as following from faithfulness constraints and their ranking cf. Prince & Smolensky (1993), McCarthy & Prince (1993), Ito & Mester (1995), Davidson & Noyer (1997).

The remainder of the present article is organized as follows. Section 2 introduces a morphological process of initial a-insertion. Section 3 deals with a insertion or schwa strengthening, and section 4 analyses the phonological processes of a-insertion and initial syllable code gemination.

2. Morphological Initial a- insertion

The segmental changes affecting a category of semi-integrated loanwords are motivated by the morphological integration of MA loanwords into the AST morphological system. This consists of replacing MA affixes by their equivalents in Tashelhiyt. This section investigates a category of MA loanwords nouns which undergo a morphological process of prefixation of the vowel [-a]. We consider herein a productive morphological process having a considerable impact on the prosodic structure of the borrowing variety, namely the prefixation of the Amazigh state marker. We start with considering the loan items which acquire an initial vowel [a] in AST, as is illustrated by the items below.

(1)

MA	AST	Gloss
$\gamma^w\text{ə}\text{r}\text{r}\text{a}\text{f}$ <i>fərdi</i>	$a\gamma^w\text{r}\text{r}\text{a}\text{f}$ <i>afrdi</i>	'big cup' 'gun'
<i>gəzzar</i>	<i>agzzar</i>	'butcher'
<i>fərmli</i>	<i>afrmli</i>	'nurse'
<i>kəmmay</i>	<i>akmmay</i>	'smoker'
<i>bužadi</i>	<i>abužadi</i>	'naïve'
<i>kuzani</i>	<i>akuzani</i>	'cook'
<i>grisun</i>	<i>agrisun</i>	'driver assistant'

The passage of the items in (1) from MA to AST triggers a process prefixing a vowel [a-], a state marker, to bring them in line with typical Amazighe nouns in the free state form. In fact, most singular Amazigh nouns begin with an [a-], the marker of the free state, as in *afus* 'hand', *amalu* 'shadow'. This vowel prefixation results in the creation of a new syllable and the deletion of the vowel of the initial syllable in the MA item, and thus in the redistribution of segments into a new syllable structure. Thus, $\gamma^w\text{ə}\text{r}\text{r}\text{a}\text{f}$ becomes $a\gamma^w\text{r}\text{r}\text{a}\text{f}$ 'big cup' and *gəzzar* becomes *agz.zar* 'butcher', while *gri.sun* turns into *ag.ri.sun* 'driver assistant'. This process of vowel prefixation is very productive and affects a wide set of nominal loans including newly borrowed nouns such as *šuwwar* >> *ašwwar* 'photographer', *šahafi* >> *ašahafi* 'journalist'. Even certain MA nouns beginning with the definite

article /l/, which represent an exception to this process³, take the initial vowel /a/ viz. *kunnaš* >> *alkunnaš* 'copybook', *kumir* >> *alkumir* 'bread'.

The prosodic motivation for these alternations finds its ground in the stress requirement of the target phonological system. The changes affecting the items in (1) result in the creation of a new syllable and thus in the shift of syllable prominence in most cases to the initial syllable. in terms of the ASTB stress system. Thus the forms *bəq.qal*, *fər.ran*, and *ɣ^wər.raf* become *abq.qal*, *afr. ran*, and *aɣ^wr.raf* (cf. Marouane 1997, 2005).

While the MA input forms are supposed to receive final stress *bəq qal*, *fər ran* and *ɣ^wər. raf*, the ASTB stress system predicts that syllable prominence would shift to the created initial syllable viz. *a^hbq.qal* *a^hfr. ran*, and *a^hɣ^wr.raf* given its weight content. The same behavior is attested in the forms like *ku.za.ni* and *sla.wi* in which stress shifts from the penultimate syllable as predicted in MA to the initial syllable in the adjusted forms *a^h.ku.za.ni* and *a^h.s.la.wi* in ASTB. We consider that *cəc* to be a weak syllable. (cf. Marouane 1997, 2005; Faizi 2002, and Bensoukas 2002, 2006/2007, 2017). Thus, *bəqqal* would be syllabified as *bəq.qal* (σσ σw).

The main constraint which these loanwords observe is structure preservation which prohibits lexical segment deletion. Prosodic adjustment is effected through vowel insertion and schwa strengthening.

Except for affixes, lexical segment deletion does not occur in this category of loanwords. Adjustment takes the form of epenthesis and segmental feature change rather than deletion. This tendency is accounted for by the following constraints.

(2) Root faithfulness (Segment Deletion Prohibition)

Each segment in the input must have a corresponding output (except for morpheme segments).

Most cases of prosodic ill-formedness in this category of loanwords are resolved by vowel epenthesis and schwa strengthening. This is captured in the principle below.

(3) Vowel Epenthesis

Affix the vowel [a] word initially to nominal forms not beginning with the definite article /l/.

Within Optimality Theory these adjustment mechanisms would be accounted for by a set of three major constraints namely MAX, ALIGN and DEP. These constraints and their ranking are delineated as follows:

³ For instance, the nouns beginning with the definite article /l/ such as [lmizan] 'balance/weighing scale' and [lkuɾsi] do not undergo /a/ prefixation.

(4.a) Constraints : MAX : Every input segment has correspondent in the output
(No deletion)

ALIGN : Make the initial syllable prominent, (Ft (σσ σw) trochaic R)

DEPV : Every output segment has a correspondent in the input (no vowel insertion)

(4.b) Ranking : Max (no deletion) >> Align (Ft (σσ σw) trochaic R >> Dep.V
(No vowel insertion)

Segment deletion prohibition in loanwords also follows from the constraint PARSE SEG which consists of attaching all segment terminal nodes to higher prosodic constituents to avoid their deletion.

These constraints evaluate the form bəqqal after having undergone [a-] insertion. Two forms are generated: a.bəq.qal maintains schwa of MA surface phonetic form and abq.qal does not as illustrated below:

(5)

/a-bqqal/	MAX (no deletion)	ALIGN (FT trochaic, R)	DEP-V (No insertion)
a. a.bəq.qal		*!	*
☞ b. abq.qal			*

The form a.bəq.qal violates two constraints ALIGN and DEP-V; and the violation of the first constraint is crucial, thus accounting for its ill-formedness. The form abq.qal, however, violates just the lowest ranked constraint DEP-V, and thus qualifies as the optimal output.

A parallel phonological outcome of this morphological process, viz., the creation of a full vowel prominent syllable is also produced by genuine phonological processes namely schwa strengthening and [a] insertion. This is the concern of the following section.

3. Schwa strengthening or a- insertion

Certain MA loanwords are subject to an adjustment process which also targets the initial syllable in which a vowel [a] appears in the position of schwa in the original words. In fact, there is a high tendency for the loanwords where the first vowel is a schwa, that the reduced vowel becomes a full vowel. Consider the following examples:

(6)

MA	AST	Gloss
<i>lməqla</i>	<i>lmaqla</i>	‘frying pan’
<i>ṭəyyəb</i>	<i>ṭṭəyyib</i>	‘proper name’
<i>ṣṣəndala</i>	<i>ṣṣəndala</i>	‘sandals’
<i>ləx^wbaɾ</i>	<i>lax^wbaɾ</i>	‘news’
<i>ləbzaɾ</i>	<i>labzaɾ</i>	‘pepper’
<i>ddənya</i>	<i>ddunit</i>	‘life’

Two competing accounts can be advanced to explain the presence of [a] instead of schwa in items such as *lmeqla* > *lmaqla* ‘frying pan’. The first would stipulate that these forms undergo a process of vowel shift or schwa strengthening whereby schwa turns into the vowel. The second account would consider this change as following from basically the same process of a-insertion which takes forms without schwas as its input. But, given that the prosodic structure is the main target of these adjustment processes, we deduce that the input MA loans to borrowing are syllabified words containing schwa. We thus consider the change that items in (6) above undergo is a case of schwa strengthening.

The schwa vowel in items such as *ləx^wbaɾ* and *lməqla* turns into a full vowel, viz. *lax^wbaɾ* and *lmaqla* respectively. This process is a case of schwa strengthening which enhances the feature content of the reduced vowel by acquiring the features [-high], and [+back]. The rule accounting for this process can be formulated as follows.

(7)

$$\text{ə} \longrightarrow \text{a [(C)C-]}$$

This schwa strengthening rule does not operate in all loanwords in which schwa occupies the initial syllable. Consider the following items.

(8)

MA	AST	Gloss
<i>ləmžəɾɾ</i>	<i>ləmžəɾɾ</i>	‘drawer’
<i>ləmɛlləm</i>	<i>ləmɛəllm</i>	‘craftsman’
<i>ləmžməɾ</i>	<i>ləmžəmmɾ</i>	‘brazier’

The items above differ from those in (6) above in that the second syllable of the former does not contain a full vowel. This divergent behavior can be explained by the syllable weight requirements in AST. The items which contain a full vowel in the second syllable tend to undergo schwa strengthening to make the initial syllable more prominent than the second. Thus, the main structural difference between the items in (6) and those in (8), and which motivates schwa strengthening in (7), is the presence of CV(C) as a second syllable in the items in (6) but not in (8). This creates a situation of syllable prominence which seems to be tolerated in *ləmžəɾɾ* but not in *ləbzaɾ*. Thus, prominence adjustment triggers schwa strengthening in the

first item, thus yielding *labzar*, but not in the second viz. **lamžər*. We need thus to reformulate the schwa strengthening rule to accommodate this new provision as follows.

$$(9) \quad \text{ə} \quad \longrightarrow \quad \text{a} \text{ [(C)C- (C) CV]}$$

Again, the prosodic motivation of this alternation is enhanced by a mirror image process which reduces the vowel /a/ into schwa in Tashelhiyt items borrowed into MA such as *laštwan* > *šətwan* ‘esplanade’ or deletes the vowel altogether as in *tiwizi* > *ttwiza* ‘collective work’.

The other type of alternation which involves the strengthening of the schwa vowel of the initial syllable is accounted for by the following principle.

(10) Strengthening of Schwa Vowel

The schwa occurring in the initial syllable is interpreted as a full vowel when followed by a full vowel syllable.

Optimality would account for this change by resorting to the same set of the constraints ranked as follows:

(11) MAX (no deletion) >> PARSE SEG >> ALIGN (Ft (σs σw) trochaic R >> DEP-V (No vowel insertion).

/lx ^w .baɾ/	MAX (no deletion)	PARSE SEG	ALIGN (FT trochaic, R)	DEP-V (No insertion)
a. lx ^w .baɾ		*!	*!	
b. ləx ^w .baɾ			*!	*
c. lax ^w .baɾ				*

The forms *lx^w.baɾ* and *ləx^w.baɾ* violate at least two constraints and thus do not qualify as optimal output. The words in the following section undergo full vowel insertion.

4. Phonological [a] insertion

The same initial syllable is the target of the insertion of a full vowel viz. /a/, though its nucleus is already filled by a high vowel. Consider the following examples.

(12)

	MA	AST	Gloss
a.	<i>ssiba</i>	<i>ssayba</i>	‘anarchy’
	<i>zzitun</i>	<i>zzaytun</i>	‘olives’
	<i>llimun</i>	<i>llaymun</i>	‘oranges’
b.	<i>ttuʃil</i>	<i>ttawʃil</i>	‘receipt’
	<i>luqat</i>	<i>lawqqat</i>	‘appointed times’
	<i>lyumayya</i>	<i>lyawmiyya</i>	‘calendar’

A situation of hiatus results from the insertion of /a/ before /i/ or /u/. i.e. *zzitun* >> **zzaitun*, and *luqat* >> **lauqat*. This is remedied by changing the vowel into a glide y or w, a productive process in Tashelhiyt termed vowel glide alternation.

The form *ssayba* violates only the lowest ranked constraint viz. DEP-V. The constraints are ranked as follows:

(13) MAX (no deletion) >> PARSE SEG >> Align (Ft (σs σw) trochaic R >> Dep.V (No vowel insertion)

/ssiba/	MAX (no deletion)	PARSE SEG	ALIGN (FT trochaic, R)	DEP-V (No insertion)
a. ssi.ba			*!	
☞ b. ssay.ba				*

A basically similar process takes place in the following set of MA loans.

(14)

MA	AST	Gloss
<i>ttilifun</i>	<i>ttalifun</i>	‘telephone’
<i>bišklit</i>	<i>bašklit</i>	‘bicycle’
<i>fliyyu</i>	<i>flayyu</i>	‘pepper mint’
<i>ttisæ</i>	<i>ttasæ</i>	‘space’

In the MA forms above, the initial syllable is headed by an /i/ vowel. The same position is filled by the mid vowel /a/ in the AST forms. There are two possible ways to account for this alternation. The first one suggests that this involves a feature changing process, whereby [-consonantal, -round, + high] becomes [-consonantal, - high, - round]. This is supported by the assumption that the vowel /a/ is the least marked vowel in Tashelhiyt (cf. Bensoukas, 2002, 2003). The second analysis would account for this alternation by considering it as a case of vowel epenthesis which operates in the forms in (12) above. According to this analysis, the form *ttilifun* undergoes /a/ epenthesis and becomes **ttailifun*. The /i/ turns into its corresponding glide to avoid vowel hiatus, viz *ttaylifun*⁴. The glide then deletes to derive *ttalifun*. Although it is costly in terms of the number of the processes it involves, the second analysis proves to be more adequate in the sense that it adheres to a more general and unified account for the adjustments occurring in the initial syllable of certain loanwords which are motivated by syllable weight requirements.

Certain segments tend to geminate in certain syllable positions. In the set below, the onset of the second syllable is geminated.

⁴ This postulation goes along with the general process of /a/ insertion occurring in many cases of MA loan nouns. To account for the alternations in 12 above as a case of vowel change (i > a and u > a) would miss this generalization.

(15)

MA	AST	Gloss
<i>ṭṭæun</i>	<i>ṭṭæεun</i>	'pestilence'
<i>ṭṭaqa</i>	<i>ttaqqa</i>	'(solar) energy'
<i>baqi</i>	<i>baqqi</i>	'still /any more'
<i>ḥayat</i>	<i>ḥayyat</i>	'life'

The items in which the initial syllable is geminated are *baqi* 'still/not yet', *ṭæun* 'plague/pest' and *ḥayat* 'life' which surface in AST as *baqqi*, *ṭṭæεun*, and *ḥayyat*, respectively. Again, the gemination of the coda of the second syllable results in strengthening the weight of the initial syllable. This alternation results in the creation of the coda of the initial syllable, and contributes, accordingly, to the increase of its weight content.

Another process which affects the initial syllable consists of the deleting schwa of the second syllable in the borrowed form. Consider the following instances.

(16)

MA	AST	Gloss
<i>kaməyyu</i>	<i>lkamyu</i>	'lorry'
<i>lmaryəyu</i>	<i>lmaryu</i>	'wardrobe'

The deletion of schwa in (16) is followed by the simplification of the geminate⁵. This can be explained by the fact that schwa deletion has resulted in the degeneration of the second syllable. This in turn has led to the redistribution of segments over syllable nodes.

We would thus formulate a unified rule to account for all these processes which increase the weight of the initial syllable of certain loanwords as follows:

(17) Initial Syllable Prominence Constraint

The initial syllable is prominent (stressed) when it does not co-occur with a superheavy syllable.

$\sigma_w \longrightarrow \sigma_s [- \sigma_w]$

We can conclude that most alternations occurring in the items above affect the initial syllable mainly. The different adjustment processes, i.e. schwa strengthening, initial /a/ insertion and vowel glide insertion, gemination, or second syllable degeneration result in one way or another in the increase of the weight of the initial syllable. Thus, the input syllable structure of this category of loanwords is not maintained. Prosodic adjustment processes tend to degenerate or alter the internal structure of these syllables. This is motivated by the integration of these forms into the AST phonological and morphological systems.

⁵ There are exceptions to this process in which the geminate is maintained, viz. *žžuṭəyya* 'flea' and *lfuqyya* 'a kind of dress'

5. Conclusion

In this article, we have investigated a prosodic adjustment process of a particular set of MA loanwords when integrating AST phonological system. This process results in phonologically and morphologically induces changes namely state marker prefixation, phonological a- insertion, schwa strengthening, and initial syllable coda gemination. Theoretically, these adjustment processes are accounted for by ranking of a set the faithfulness constraints MAX (no deletion) >> PARSE SEG >> Align (Ft (σ σ w) trochaic R >> Dep.V (No vowel insertion).

We have seen that the relevance of studying these different processes stems from the fact that they all yield a unified prosodic outcome that of making the initial syllable prominent while being integrated into the prosodic structure of AST. We thus conclude, following the findings in Marouane (2005), that these processes triggered by AST prosodic integration requirements reveal an important tendency of prosodic structure of AST, namely the strengthening of the initial syllable. The fact that these processes operate productively in MA loanword integration enhances the prosodic tendency within AST to make initial syllables with a full vowel prominent.

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