

## **The Amazigh influence on Moroccan Arabic: Phonological and morphological borrowing<sup>1</sup>**

Mohamed Lahrouchi  
*CNRS & Université Paris 8*

### **ملخص**

تعالج هذه الورقة بعض السمات الصوتية والصرفية الرئيسية التي طورتها العربية المغربية في اتصالها مع الأمازيغية. انطلاقاً من الأعمال السابقة، سنبين أن العربية المغربية قد فقدت الحركات القصيرة المقابلة لنظيراتها الفصيحة، وظهرت بدل ذلك حركة وسطية قصيرة تستعمل أساساً لتفريق الصوامت في المجموعات المردودة. وبناءً على ذلك، يبدو أن أفضل تحليل لتوزيع هذه الحركة القصيرة هو نموذج صامت – صائت صارم يلزم كل صامت تحتي غير مرتبط برأس أن يصبح صائتاً في البنية السطحية ما عدا الضمة التي احتفظت بها العربية المغربية عندما تظهر بجوار صامت شفوي أو حجابي أو لهوي. وتشترك العربية المغربية والأمازيغية كذلك في المماثلة لصفيرية حيث تظهر في مجال محدد هو الجذع مسبقاً بمقتنة CV فارغة. ويمكن هذا الموضع الفارغ كلاً من أداة التعريف العربية وسابقة التعدية الأمازيغية من التماثل مع الأصوات الصفيرية في الجذر. أما على المستوى الصرفي، فإن المقالة تتطرق علامة التأنيث الأمازيغية التي أخذتها عنها العربية المغربية.

### **Abstract**

This paper outlines some of the main phonological and morphological features that Moroccan Arabic has developed in contact with Amazigh. Based on previous work, it is argued that Moroccan Arabic has lost the Classical Arabic short vowels and has developed a short central vowel used to break up illicit consonant clusters. It is shown that the distribution of this schwa-like vowel is better analysed within a strict CV model where ungoverned empty vocalic positions surface at the phonetic level. In the same vein, it is proposed that the Classical Arabic short [u] is kept in Moroccan Arabic as a labial feature when it occurs in the vicinity of a labial, velar or uvular consonant. Sibilant harmony is another feature that Moroccan Arabic shares with Amazigh. It is analysed as a long distance process which occurs within a specific domain, consisting of the stem template, plus an empty initial CV. This empty site allows for the Moroccan Arabic definite article and the Amazigh causative prefix to harmonize with the stem sibilant. The influence of Amazigh on Moroccan Arabic is also visible at the morphological level. We discuss the behaviour of the circumfix /ta...-t/, which Moroccan Arabic borrowed as an unanalysed complex, used to form abstract nouns and profession nouns.

<sup>1</sup> I am very grateful to Karim Bensoukas, the editors and the anonymous reviewers for their valuable feedback. All remaining errors or omissions are of course my own.

## 1. Introduction

Centuries of coexistence with Amazigh have deeply impacted the Moroccan varieties of Arabic in all aspects of the lexicon and grammar. One of the major features these varieties have developed in contact with Amazigh is the loss of vowel length contrast: From Classical Arabic (henceforth, CA), they have retained three short vowels /i, a, u/, and they have developed a short central vowel [ə], which Caubet (2007: 03) historically views as a merge of /a/ and /i/, in contrast with /ū/ found in forms like *skūt* ‘shut up!’ and *xūbz* ‘bread’<sup>2</sup> (see also Watson 2002: 21). In mainstream Moroccan Arabic (henceforth, MA), /u/ is realized as a secondary feature on labial, velar and uvular consonants, similarly to Amazigh *ak<sup>w</sup>r* ‘steal’, *g<sup>w</sup>mr* ‘hunt, fish’ and *alq<sup>w</sup>najn* ‘rabbit’ (Heath 1997: 209). Another feature that MA has developed in contact with Amazigh is sibilant harmony, a long distance process whereby /s/ and /z/ agree in voice and anteriority with post-alveolar /ʃ/ and /ʒ/: e.g. /zuʒ/ > [ʒuʒ] ‘two’, /ʃms/ > [ʃəmʃ] ‘sun’, /zlliz/ > [ʒəlliz] ‘tiles’ (see Caubet 2007, and Zellou 2010). Morphology is no exception to this trend: MA has borrowed the Amazigh feminine marker as a derivative prefix, used to form abstract nouns often referring to professions (cf. Guay 1918, Colon 1947, Chtatou 1997, Tilmatine 1999, Caubet 2007, and Zellou 2011). The examples in (1) illustrate the phenomenon.

(1)	<i>Base noun</i>		<i>Profession noun</i>
	bəqqal	‘grocer’	tabəqqalt
	sərraʒ	‘saddler’	tasərraʒt
	bərraħ	‘crier’	tabərraħt
	bənnaj	‘mason’	tabənnajt
	χərraz	‘shoemaker’	taχərraʒt

Atypical morphological borrowing of this type, which converts a flectional affix into a derivational one will be studied along with the aforementioned phonological features. In section 2, it is argued that the loss of vowel length contrast results from the loss of CA short vowels in line with the proposal put forth in Lowenstamm (1991). The schwa-like vowel will be analysed as an “epenthetic” vowel, whose distribution is entirely predictable from a syllabic point of view. Sibilant harmony is discussed in section 3. A comparison with Amazigh will prove necessary for

<sup>2</sup> According to Caubet (2007: 03), Moroccan Arabic has five vowels, “three long or medium ones: /ā/, /ī/, /ū/, and two short or ultra-short ones: /ə/, /ü/.” The phonemic status of the two short vowels is subject to debate, as we will show in this paper.

understanding the phenomenon. Section 4 turns to morphological borrowing: The nature and the behaviour of the circumfix /ta-...-t/ will be examined therein. Section 5 concludes the paper.

## 2. Segmental aspects

As members of the Afroasiatic language family, MA and Amazigh share several phonological features, part of which is naturally reflected in their phonemic inventory. Of particular interest is the vowel system of MA, which has lost vowel length contrast in contact with Amazigh. There is a broad consensus among scholars that the three full vowels of MA are historical reflexes of long vowels and diphthongs in Classical Arabic, and that the schwa has replaced the Classical Arabic short vowels (see, among others, Heath 1997, Elmedlaoui 2000, Watson 2002, Caubet 2007, and Lahrouchi 2018a). The examples in (2) clearly illustrate this idea.

(2)	<i>Classical Arabic</i>	<i>Moroccan Arabic</i>	
i.	wa:faqa	wafəq	‘he agreed’
	kita:b	ktab	‘book’
	lisa:n	lsan	‘tongue’
	ħabi:b	ħbib	‘beloved’
ii.	fahima	fħəm	‘he understood’
	labisa	lbəs	‘he wore’
	samiʕa	sməʕ	‘he heard’
	kataba	ktəb	‘he wrote’
iii.	qaws	qus	‘arch’
	lawn	lun	‘colour’
	bajt	bit	‘room’
	sajf	sif	‘sword’

It is worth noting that the distribution of schwa is limited, as opposed to the remaining vowels; it appears only in closed syllables. Furthermore, it alternates with zero in many contexts, including pre- and post-vocalic CC clusters (see Benhallam 1989/1990, Kabbaj 1990, Kaye 1990, Boudlal 2006, Bensoukas & Boudlal 2012, Lahrouchi 2018a, among others).

The situation just depicted in MA also arises in Amazigh, as the examples in (3) show in the Tamazight variety. In the items in (3a), the long vowels of Classical Arabic surface as short in

Tamazight, while the short vowels are deleted, and replaced when necessary by schwa. The latter vowel is also found in Tamazight native words (3b).

(3)

a.	<i>Classical Arabic</i>	<i>Tamazight</i> (Taïfi 1991)	
	ʔalbahr	ləbħər <sup>ɕ</sup>	‘the sea’
	balaya	bləy	‘to grow up’
	ħadʕana	ħdʕən	‘to supervise, place under wardship’
	sa:fara	safər	‘to travel’
	ʔalba:b	lbab	‘the door’
	ʔalfi:l	lfi:l	‘the elephant’
b.	<i>Tamazight native words</i>		
	lməd		‘learn’
	kməz		‘scratch’
	rməd		‘gnaw’
	ttər		‘ask, request’

Although there is little doubt that the loss of vowel length in MA and the use of schwa are substrata of the Amazigh language, studies diverge as to the way this can be analysed, especially with regard to the status of schwa. Several scholars, such as Heath (1997), Caubet (2007) and Watson (2002), claim that schwa is the reflex of Classical Arabic short vowels, suggesting that it has a phonemic status (Caubet 2007: 03, Aguadé 2010)<sup>3</sup>, while others argue that it is a mere epenthetic vowel used to break up illicit consonant clusters (cf. Benhallam 1980, 1989/1990, Boudlal 2006, 2009, Bensoukas & Boudlal 2012, Lahrouchi 2018a, among others). One piece of evidence in favour of the latter hypothesis lies in the distribution of schwa and its alternation with zero. If schwa were the result of the merger of Classical Arabic short vowels, it should be able to occur in open and closed syllables as well, just like short vowels do in Classical Arabic. Actually, MA bans any occurrence of schwa in open syllables: a form like \*kətəbə (from Classical Arabic *kataba* ‘he wrote’) is excluded. Furthermore, the position of schwa within the word varies depending on the nature of the affixes added to the base: For instance, in the 3<sup>rd</sup> masculine singular *ktəb* ‘he wrote’, schwa appears between the last two consonants, whereas in the

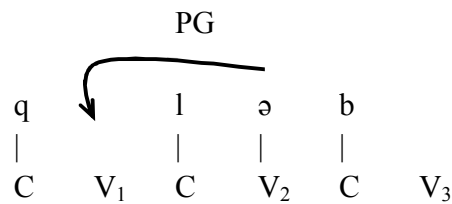
<sup>3</sup> Based on minimal pairs like *ħəbb* ‘he kissed’ ≠ *ħübb* ‘love’, *ħəkk* ‘he rubbed’ ≠ *ħükk* ‘small box’, *nəqra* ‘I will read’ ≠ *nüqra* ‘silver’, *ħərr<sup>ɕ</sup>* ‘more spicy than’ ≠ *ħürr<sup>ɕ</sup>* ‘free’, *nəss<sup>ɕ</sup>* ‘text’ ≠ *nüss<sup>ɕ</sup>* ‘half’ and *xəd<sup>ɕ</sup>r<sup>ɕ</sup>a* ‘green (fem.)’ ≠ *xüd<sup>ɕ</sup>r<sup>ɕ</sup>a* ‘vegetable’, Aguadé (2010: 101) argues that the vowels /ü/ are /ə/ are phonemic in MA.

corresponding feminine *kətbət* ‘she wrote’ it shifts leftward between the first two consonants. This is a notable difference when comparing the schwa of MA to that of French, which can be omitted but never moved: *quelques semaines* ‘some weeks’ can be realized as [kɛlkəsəmɛn] or [kɛlkəsmɛn], but not as \*[kɛləksəmɛn].<sup>4</sup>

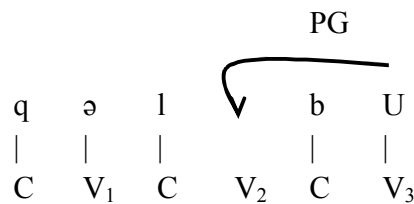
The behaviour of schwa in MA, just sketched out, makes its distribution largely predictable. Standard syllable-based analyses view it as an epenthetic vowel used to avoid complex codas (cf. Benhallam 1980, Boudlal 2001, and Echchadli 1986, among others).<sup>5</sup> An alternative is provided in Kaye (1990), which argues that schwa-zero alternations in MA are better analysed in terms of empty vocalic positions, of which the properly ungoverned ones surface as schwa (see also Lahrouchi 2018a). The pair *qləb* ‘he upturned’ / *qəlbū* ‘they upturned’, represented below in (4), illustrates this kind of analysis (PG = Proper Government):

(4)

a.



b.



These representations, which use the strict CV approach to syllable structure (Lowenstamm 1996; Scheer 2004), clearly show that empty vocalic positions cannot be adjacent.

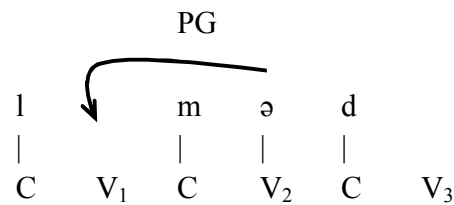
<sup>4</sup> One could argue that in Colloquial French this form is viable without any schwa. Actually, this is possible to the extent that the deletion of schwa does not yield an illicit consonant cluster. To my knowledge, the four-consonant cluster that results from the omission of schwas is simplified by deleting the lateral consonant, leading to the form [kɛksmɛn] instead of \*[kɛlksmɛn].

<sup>5</sup> Except for some category-specific words which allow complex codas in the final position: e.g. *kəlb* ‘dog’, *qəlb* ‘heart’, *ħənʃ* ‘snake’. The reader is referred to Echchadli (1986) for a thorough discussion of this issue (see also Boudlal 2001, 2006/2007).

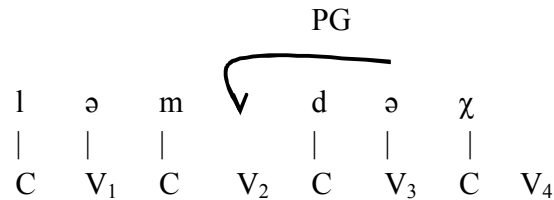
Any sequence of two empty positions must realize one, depending on the government relation contracted with the neighbouring vowels (see Kaye *et al.* 1990 on government phonology). In (4a), V<sub>3</sub> is licensed to remain empty by virtue of being word-final. Properly ungoverned V<sub>2</sub> surfaces as schwa and then governs V<sub>1</sub>. In (4b), the third plural marker –u associated to V<sub>3</sub> properly governs V<sub>2</sub>, allowing it to remain phonetically inaudible. Then, V<sub>1</sub>, no more governed, surfaces as schwa. The same mechanism underlies the distribution of schwa in all Amazigh varieties<sup>6</sup>, apart from Tashlhiyt where syllabic consonants arise (see Dell & Elmedlaoui 1985, 2002, Boukous 1987, Jebbour 1996, 1999, Bensoukas 2001, Ridouane 2008, Lahrouchi 2018a, among others.) The forms represented in (5) show how the schwa-zero alternations are handled in the Tamazight variety.

(5) *lməd* ‘learn (aorist)’ / *ləmdəχ* ‘I learnt’

a.



b.



The distribution of schwa in Tamazight proceeds in much the same way as it does in MA. The word-final vocalic position is licensed to remain empty, therefore allowing the preceding one to be phonetically realized. In (5a), properly ungoverned V<sub>2</sub> surfaces as schwa and then governs V<sub>1</sub>. The same position properly governed by V<sub>3</sub> remains silent in (5b), while V<sub>1</sub> realizes as schwa. The difference between the bare form in (5a) and the inflected one in (5b) ultimately lies in the distribution of empty nuclei, among which the ungoverned ones surface at the phonetic level.

<sup>6</sup>According to Kossmann (1997: 50), certain varieties of Amazigh have phonemic ("structural") schwa as well as an epenthetic one, relying on a few minimal pairs such as *nətc* ‘me’ / *ntəc* ‘we eat (aorist)’ and certain affixes like the nominal plural suffix *-ən* whose vowel has a fixed position.

According to Lowenstamm (1991: 959), the situation depicted in MA reflects the loss of the ability to associate peripheral vowels to non-branching positions. Consequently, only Classical Arabic long vowels, attached to two positions, remained in MA (although they surface as short). The consonant clusters resulting from the loss of the short peripheral vowels are then simplified by means of schwa epenthesis. The same reasoning has been extended to the Amazigh vocalic system (see among others Bendjaballah 1999, 2005, Lahrouchi 2001, 2003, Lahrouchi & Ségéral 2010, and Ben Si Saïd 2014).

The hypothesis that branching preserves the phonetic realization of segments is further evidenced by the vestige of Classical Arabic short /u/ in MA. Interestingly, this vowel is kept either as short [ũ] or as a labial feature in the vicinity of a labial, velar or uvular consonant. This feature, which has been largely studied (see Heath 1997, Boudlal 2001, 2009, Caubet 2007, Zeroual et al. 2001, and Bensoukas & Boudlal 2012), is viewed as a substratum of the Amazigh language, since it is not found in the Middle-Eastern varieties of Arabic. A rapid comparison of the MA examples in (6a) and the Amazigh (Tashlhiyt variety) ones in (6b) shows strong similarities in this respect.

(6)	<i>Singular</i>	<i>Plural</i>	
a.	muza	mm <sup>w</sup> aʒ	‘wave’
	baliza	bb <sup>w</sup> aləz	‘suitcase’
	fut <sup>ʕ</sup> a	ff <sup>w</sup> at <sup>ʕ</sup> e	‘towel’
	mula	mm <sup>w</sup> alin	‘owners’
	qoffa	q <sup>w</sup> faf	‘straw basket’
b.	ayjjul	iɣ <sup>w</sup> jjal	‘donkey’
	agru	ig <sup>w</sup> ra	‘frog’
	agajju	ig <sup>w</sup> jjja	‘head’
	aqammu	iq <sup>w</sup> mma	‘face (slang)’
	akbur	ik <sup>w</sup> bar	‘squirrel’

The vowel /u/ of the singular forms is kept in the plural as a labial feature on the labial velar, or uvular consonants. The retention of this feature on this specific subset of consonants, to the exclusion of any other type of consonants, suggests that they share labiality. Several studies, mainly couched within Element Theory, argue that labial and velar consonants contain a labial

element [U] (see Harris 1990, 1994, Backley 2011, 2012, and Scheer 1996)<sup>7</sup>. It is precisely the sharing of this element that allows the short /u/ in the singular forms to remain as a secondary articulation on the preceding consonant in the plural.<sup>8</sup> The same reasoning underlies the presence of the secondary labial feature in many other forms of MA, some of which clearly show that they lost the short /u/ of Classical Arabic (7a). Similar forms which inherit the labial feature from an underlying /u/ are found in Amazigh (7b).

(7)

a.	<i>Moroccan Arabic</i>	<i>Classical Arabic</i>	
	x <sup>w</sup> əbz	xubz	‘bread’
	sk <sup>w</sup> ət	ʔuskut	‘shut up!’
	sk <sup>w</sup> ən	jaskunu	‘he lives’
	sk <sup>w</sup> at	suku:t	‘silence’
	g <sup>w</sup> ʕəd	ʔuqʕud	‘sit down!’
b.	<i>Amazigh (Tashlhiyt variety)</i>		
	<i>Aorist</i>	<i>Preterit</i>	
	knu	ik <sup>w</sup> na	
	gru	ig <sup>w</sup> ra	
	qlu	iq <sup>w</sup> la	
	xlu	ix <sup>w</sup> la	
	ag <sup>w</sup> m	jugm	
	ak <sup>w</sup> r	jukr	

It is worth mentioning that in Amazigh, labiovelarization is blocked for labial consonants: For instance, the preterit forms of *bnu* ‘build’ and *ftu* ‘go away’ are *ibna* and *ifta*, without labiovelarized /b/ and /f/. This phonotactic restriction on the distribution of the labial feature is due, according to Lahrouchi & Ulfsbjorninn (2018), to its being redundant on an expression that

<sup>7</sup> Note, however, that Scheer (1996) distinguishes labiality [B] from velarity [U]. The first element is found in labial consonants, and the second in velar consonants.

<sup>8</sup> The reader is referred to Honeybone (2005) on the idea of “sharing makes us stronger”. See also Bucci (2013) on Coratino, an Italian dialect in which unstressed labial and palatal vowels resist reduction when sharing their feature with a neighbouring consonant.



already contains headed labial element [U] (labials are headed by [U], but not velars and uvulars).<sup>9</sup> The same phenomenon is responsible, we argue, for labial dissimilation in reciprocal forms, a phenomenon which turns the prefix /m-/ into [n]: e.g. /m-gibil/ > [ngibil] ‘face each other’, /m-simih/ > [nsimih] ‘apologize to each other’ (see Elmedlaoui 1992, Lasri 1991, Alderete 1997, Lahrouchi 2003, 2018b, and Bensoukas 2014). Unlike MA, Amazigh does not allow more than one headed [U] consonant per word.

The next section deals with sibilant harmony, another property that MA shares with Amazigh. We shall see that the sibilants contained within a specific domain undergo anteriority harmony (in both languages) and voicing harmony (only in Amazigh).

### 3. Phonological activity: sibilant harmony

In Amazigh, the causative prefix agrees in voicing and anteriority with the sibilant consonant in the verb stem (see Bensoukas 2004, Elmedlaoui 1992, Dell & Elmedlaoui 2002, Kossmann 1997, and Lahrouchi 2001, 2003, 2018b). This is shown in the examples in (8).

#### (8) *Tashlhiyt variety*

	<i>Verb</i>	<i>Causative</i>	
a.	mun	smun	‘pick up’
	gudi	sgudi	‘put in a pile’
	nkr	ssnkr	‘wake’
	nu	ssnu	‘cook’
b.	kuʃm	ʃkuʃm	‘paralyze’
	ħuʒzu	ʃħuʒzu	‘visit Mecca’
	nʒm	ʒʒnʒm	‘save’
	nz	zznz	‘sell’

In (8a), the causative prefix surfaces as a voiceless alveolar sibilant, whose quantity variation is regulated by the prosodic shape of the verb stem (see Jebbour 1999, Dell & Elmedlaoui 2002, and Lahrouchi 2018b). This contrasts with the examples in (8b), where the causative prefix is realized as a voiced or voiceless palato-alveolar sibilant, depending on the nature of the sibilant in the stem. Furthermore, we note that voicing harmony is blocked

<sup>9</sup> The idea that labial consonants are headed by the labial element [U] is also made explicit in Backley (2012 : 81), Kaye (2000), and Scheer (1996).

whenever a voiceless consonant intervenes between the voiced sibilant and the causative prefix such as in *ʃhuʒzu*.

MA has developed the same phenomenon in contact with Amazigh, as shown in the examples in (9) below. The reader is referred to Harris (1942), Harrell (1962), Heath (1987), and Zellou (2010), for further details and analysis.

(9) *Moroccan Arabic*

zuʒ	~	ʒuʒ	‘pair, two’
zzaʒ	~	ʒzaʒ	‘the glass’
sərʕʒəm	~	ʃərʕʒəm	‘window’
sʔənʒ	~	ʃʔənʒ	‘doughnut’
sfərʕʒəl	~	ʃʔərʕʒəl	‘quince’
ssəmʃ	~	ʃʃəmʃ	‘the sun’

This long distance harmony, applying and changing the word-initial sibilant into [ʃ] or [ʒ], is optional. Accordingly, the alternations in (9), indicated by a tilde, are in free variation, and certain speakers may use one or the other type of forms, depending on their language register.

It is worth adding that sibilant harmony is limited to the stem, except for the definite article, which undergoes the process by assimilating to the first consonant of the stem (e.g. /l-sfərʕʒəl/ > [ʃʔfərʕʒəl] ‘quince’).<sup>10</sup> In contrast, in Amazigh the process targets the causative prefix, when immediately preceding the stem (8b). In case another prefix occurs in the immediate vicinity of the stem, the causative prefix remains unchanged. This is exemplified in (10) by the verb *ʃ-hʃʃm* ‘be ashamed’ whose causative prefix immediately preceding the stem undergoes harmony. When the reciprocal prefix is added, the causative /s-/ remains unchanged.

(10)	<i>Verb</i>	<i>Causative</i>	<i>Reciprocal</i>	<i>Causative + Reciprocal</i>	
	hʃʃm	ʃ-hʃʃm	n-hʃʃm	s-n-hʃʃm	‘shame each other’

The careful reader will have noticed that the reciprocal prefix /m/ dissimilate into [n], in reaction to the stem labial consonant; a phenomenon we have been discussing in the previous section. Based on this type of alternations, Lahrouchi (2001, 2003, 2018b: 15) has proposed that sibilant harmony and labial dissimilation occur within a specific domain, which consists of the

<sup>10</sup> The anonymous reviewers rightly noticed that the sibilants do not undergo voicing agreement in MA. All the cases of sibilant harmony we could think of involve anteriority only, turning underlying /s/ and /z/ into [ʃ] and [ʒ], respectively.

stem template, preceded by an initial empty site of the form CV. Complex combinations of the causative and reciprocal prefixes allow only the inner prefix, which has access to the initial site, to interact with the segmental content of the stem. The representation in (11) helps in understanding the proposal (the reader is referred to the original work for details and analysis).

- (11) a. /s-ħffim/ >> [ʃħffim]                      b. /s-m-ħiffim/ >> [snħiffim]
- |   |  |
|---|--|
| ʃ    ħ        ʃ    m<br>             / \    <br>vb[ <u>CVCVCVCVCV</u> ] | s        n    ħ   i   ʃ   i   m<br>                      / \        <br>CV <sub>vb</sub> [ <u>CVCVCVCVCV</u> ] |
|---|--|

The causative prefix undergoes sibilant harmony in (11a) since it has access to the initial CV (underscored), which falls within the domain of the verb. In (11b), it is the reciprocal prefix that attaches to the initial CV, resulting in its dissimilation into [n] and preventing at the same time the causative prefix from harmonizing with the stem sibilant.

Before concluding, we turn to morphological borrowing. The next section outlines a specific type of nouns, which uses the Amazigh gender marker to derive so-called profession names and abstract “quality” nouns.

#### 4. Morphological borrowing

Amazigh has had such an impact on the phonological system of MA that it is very difficult for natives of other Arabic varieties (especially Eastern ones) to understand it, mainly due to the loss of vowel length contrast. This feature has probably also contributed to restructuring the morphological shape of words, particularly with regard to case marking. The CA markers for the nominative, accusative and genitive cases, which happen to be short vocalic suffixes, have all disappeared in MA, just like any other short vowels: For example, the CA forms *arrazul-u* (nominative), *arrazul-a* (accusative) and *arrazul-i* (genitive) have all merged into one form in MA, namely *rrʕaʒəl* ‘the man’.

Like MA, Amazigh has no case marking. Nouns in this language are inflected for free and construct states, but not for case (see El Moujahid 1997, Ennaji 2001, Guerssel 1987, 1992, 1995, Ouhalla 1988, 1996, Lahrouchi 2013, among others). The initial vowel in masculine forms alternates between the free state *a-* and the construct state *u-* (e.g. *a-frux* / *u-frux* ‘boy’), while in the feminine free state *ta-* alternates with construct state *t-* (e.g. *ta-fruxt* / *t-frux-t* ‘girl’).

This brings us to another type of borrowing in MA, namely the use of the circumfix /ta-...-t/ as a derivational affix. In Amazigh, this affix consists of two ingredients: the feminine marker /t/, circumfixed to the stem, and the nominal marker *a-*, which some scholars analyse as a kind of “portmanteau” morpheme, realizing definiteness and/or case (Guerssel 1987, 1992, Ouhalla 1988, and El Hankari 2014). We put aside the issue of definiteness and case marking in Amazigh, for it goes beyond the scope of this paper. The readers’ attention is drawn to the morphological pieces of the aforementioned circumfix, and their role in Amazigh as opposed to MA. In addition to being a gender marker, /t-...-t/ is used in diminutives as well as in the formation of abstract and profession nouns, which Chtatou (1997: 113) terms resultative nouns. Examples are given in (12) below.

(12) Tashlhiyt variety

a.	<i>Base noun</i>	<i>Diminutive</i>	
	ay <sup>w</sup> rab	tay <sup>w</sup> rabt	‘wall’
	akur	takurtt	‘ball’
	agajju	tagajjut	‘head’
	amzz <sup>ʕ</sup> uy	tamzz <sup>ʕ</sup> uyt	‘ear’
	afarnu	tafarnut	‘type of oven’
b.	<i>Agentive noun</i>	<i>Abstract noun/profession</i>	
	andd <sup>ʕ</sup> am	tandd <sup>ʕ</sup> amt	‘poet, poetry’
	agzzar	tagzzart	‘butcher, butchery’
	abnnaj	tabnnajt	‘builder, masonry’
	aflah	taflaht	‘farmer, agriculture’
	abrrah	tabrraht	‘crier, auction’

The base nouns in (12a) are all masculine. Adding the feminine marker allows deriving the corresponding diminutives, which naturally shift their gender into feminine. The same mechanism yields abstract nouns and profession names from agentive nouns, some of which have their bases borrowed from Arabic. This is for instance the case for *tabnnajt* and *taflaht*. The base of the latter coexists with a native agentive noun, namely *amkraz* ‘ploughman’.

MA borrowed the Amazigh feminine marker along with the initial vowel *a-*, the typical nominal marker, restricting their use to abstract nouns and profession names, to the exclusion of

diminutives, which undergo another type of formation (see Boudlal 2001, and Lahrouchi & Ridouane 2016). The examples in (13), part of which is taken from Harrell *et al.* (1963), illustrate the phenomenon in MA.

(13)

a.	<i>Base noun</i>	<i>Profession</i>	
	χərraz	taχərrazt	‘shoemaker, shoe repairing’
	fəllah	tafəllaht	‘farmer, agriculture’
	nəʒʒar <sup>ʕ</sup>	tanəʒʒar <sup>t</sup>	‘carpenter, carpentry’
	ʃəffar <sup>ʕ</sup>	taʃəffar <sup>t</sup>	‘thief, thievery’
	xəbbaz	taxəbbazt	‘baker, bakery’
	bəqqal	tabəqqalt	‘grocer, grocery’
b.	<i>Base noun</i>	<i>Abstract noun / quality</i>	
	kəddab	takəddabit	‘liar, lying’
	hr <sup>ʕ</sup> am	tahhr <sup>ʕ</sup> ajmit	‘forbidden, cunningness’
	məyrib	tamyribit	‘Morocco, act of being Moroccan’
	ʕəzri	taʕəzrit	‘bachelor, bachelorhood’
	r <sup>ʕ</sup> aʒəl	tar <sup>ʕ</sup> ʒlit	‘man, bravery’
	fd <sup>ʕ</sup> uli	tafd <sup>ʕ</sup> ulit	‘intrusive, meddling interference’

As noticed by Zellou (2010: 235), this morpheme was borrowed into MA as an unanalysed complex form whose components do not undergo the same morphological alternations as in the source language. Indeed, the vowel of the prefixed part of this circumfix remains unchanged in MA, while it obeys the general (morpho-phonological) rules of the Amazigh grammar. For example, it undergoes deletion in the construct state (e.g. *tabqqalt* ‘grocery’ / *n tbqqalt* ‘of grocery’), and it alternates though very rarely with *i-* in the plural (e.g. *tandd<sup>ʕ</sup>amt* (sg) / *tindd<sup>ʕ</sup>amin* (pl) ‘poetry’, *tahhrajmit* (sg) / *tihhrajmijin* (pl) ‘cunningness’). Plurals of this type are even rarer in MA; the only case I have been able to find is *tahhr<sup>ʕ</sup>ajmijāt* (<*tahhr<sup>ʕ</sup>ajmit* (sg)), formed by means of *-at* suffixation, just like any other external plural.

Another property which deserves to be mentioned relates to variation. To my knowledge, examples of the type in (13) can be realized without schwas: a form like *nəʒʒar<sup>ʕ</sup>* along with its corresponding profession name *tanəʒʒar<sup>t</sup>* can be in free variation with *nʒʒa<sup>ʕ</sup>r* and *tanʒʒar<sup>t</sup>*,

respectively. Likewise, *fəffar<sup>s</sup>* and *tafəffar<sup>s</sup>t* can be realized as *fffar<sup>s</sup>* and *taffar<sup>s</sup>t*. This is also confirmed in the phonetic forms provided by Chtatou (1997: 113). The omission of schwas in these variants would then stand for another phonological feature that MA has borrowed from Amazigh, which allows complex consonant clusters without any vowel, especially in the Tashlhiyt variety. Schwas are optionally deleted in the vicinity of obstruents, be they voiced or voiceless, while they tend to be preserved when adjacent to a sonorant (e.g. *χərraz* / *taχərrazt* (13a)). Extending their hypothesis on Tashlhiyt Berber syllable structure, Dell & Elmedlaoui (2002) analyse the consonant clusters of the type just described in MA as containing syllabic consonants.

Cross-linguistically, there is a tendency for morphological borrowing of the type discussed above to preserve as much as possible the original form of the morphemes in the host language (see Zellou 2011: 236 and references therein). It is worth noticing here that despite its morphological unanalysability, /ta-...-t/ has evidently preserved its gender specification in MA: all forms of the type in (13) are marked as feminine. Languages differ as to degree of adaptation of the borrowed morphemes: For instance, Latin words like *corpus*, *formula* and *copula* form their plural in English as *corpora*, *formulae* (or *formulas*), and *copulae* (or *copulas*), respectively, whereas in French they remain invariable in the singular and plural. Italian words like *panini* and *spaghetti*, which end in a plural marker, remain unchanged in French and English, irrespective of their number. They are adapted as unanalysed morphemes, just like MA does with the Amazigh morpheme /ta-...-t/.

## 5. Conclusion

In this article, I have outlined some of the intricate phonological and morphological features which Moroccan Arabic has developed in contact with Amazigh. Based on previous work, I have argued that Moroccan Arabic has lost the Classical Arabic short vowels, resulting in a vocalic system where length is no longer contrastive. The language has also developed a short central vowel, referred to as schwa, which is used to break up illicit consonant clusters. I have shown that the distribution of this schwa is predictable, and that its alternation with zero is better analysed within a strict CV analysis where empty vocalic positions interact laterally to derive the surface consonant clusters. Only ungoverned empty positions surface as schwa. In relation to this issue, I have also examined labiovelarization, a feature that MA shares with Amazigh. I have

shown that a floating /u/ surfaces as a secondary feature on the consonants which already contain a labial feature (element [U]).

Sibilant harmony, another feature which MA borrowed from Amazigh, has been analysed as a long distance process that is confined within a specific domain, consisting of the stem template, plus an empty initial CV. This empty initial site allows for the Moroccan Arabic definite article and the Amazigh causative prefix to harmonize with the stem sibilant when no other morpheme immediately precedes the stem. Complex combinations of causative and reciprocal prefixes in Amazigh show that only the inner prefix, which has access to the initial site, interacts with the stem consonants: Labial dissimilation triggers the reciprocal prefix when it immediately precedes a stem which contains a labial consonant (causative + reciprocal + stem); the reverse order (reciprocal + causative + stem) allows the causative prefix to agree in voicing and anteriority with the stem sibilant.

As for morphological borrowing, I have focused on the circumfix /ta...-t/, which MA borrowed as an unanalysed complex form, whose components do not show any alternations. In Amazigh, this complex morpheme consists of a feminine marker *t*, circumfixing the stem, plus an initial vowel *a-*, which is generally analysed as a noun marker. The circumfix is also used to derive diminutives and profession abstract nouns. In Moroccan Arabic, its function is limited to the formation of profession nouns and abstract nouns.

Long-lasting contact between Amazigh and Arabic has deeply impacted the structure of the Moroccan variety, extending over all aspects of grammar, including phonetics, phonology and morphology. Nowadays, the impact goes the other way around, with a growing influence of Arabic on Amazigh, which operates mainly at the lexical level (lexical borrowing), while other components of grammar are barely affected.

## References

- Alderete, John (1997). Dissimilation as local conjunction. In *Proceedings of North East Linguistic Society 27*, Kiyomi Kusumoto (ed.), 17-31. Amherst: Graduate Linguistic Student Association. [Reprinted in John McCarthy (ed.), *Optimality Theory in phonology: Selected readings*, 394-406. Oxford: Blackwell].
- Backley, Phillip (2011). *Element theory, an introduction*. Edinburgh: Edinburgh University Press.
- Backley, Phillip (2012). Variation in Element Theory. *Linguistic Variation* 12.1, 57-102.

- Benhallam, Abderrafi (1980). *Syllable structure and rule types in Arabic*. Ph.D. dissertation, University of Florida.
- Benhallam, Abderrafi (1989/1990). Moroccan Arabic syllable structure. *Langues et Littératures* 8: 177-191.
- Bendjaballah, Sabrina (1999). *Trois figures de la structure interne des gabarits: activité morphologique du niveau squelettal des représentations phonologiques en berbère, somali et bedja*. Ph.D. dissertation, Université Paris 7.
- Bendjaballah, Sabrina (2005). Longueur phonologique des voyelles en kabyle. *Etudes et documents berbères* 22: 47-69.
- Ben Si Said, Samir (2014). *De la nature de la variation diatopique en kabyle: étude de la formation des singulier et pluriel nominaux*. Ph.D. dissertation, University of Nice.
- Bensoukas, Karim (2001). *Stem Forms in the Nontemplatic Morphology of Berber*. Doctorat d'Etat Thesis, Mohamed V University, Rabat.
- Bensoukas, Karim (2004). Markedness, faithfulness and consonant place in Tashlhiyt roots and affixes. *Langues et Littératures* 18: 115-153.
- Bensoukas, Karim (2014). *Featural dissimilation in Tashlhit: Avoiding the repetition of labial and round*. Rabat: Mohamed V University.
- Bensoukas, Karim & Abdelaziz Boudlal (2012). An Amazigh substratum in Moroccan Arabic: The prosody of schwa. *Langues et Littératures* 22: 179-221.
- Boudlal, Abdelaziz (2001). *Constraint Interaction in the Phonology and Morphology of Casablanca Moroccan Arabic*. Doctorat d'Etat thesis, Mohammed V University, Rabat.
- Boudlal, Abdelaziz (2006/2007). Sonority-driven schwa epenthesis in Moroccan Arabic. *Languages and Linguistics* 18/19: 59-81.
- Boudlal, Abdelaziz (2009). The prosody and morphology of a Moroccan Arabic dialect: An Optimality-theoretic account. Saaebrüchen: VDM Verlag Dr. Müller.
- Bucci, Jonathan (2013). Voyelles longues virtuelles et réduction vocalique en coratin. *Canadian Journal of Linguistics/Revue Canadienne de Linguistique* 58(3): 397-414.
- Chtatou, Mohamed (1997). The influence of the Berber language on Moroccan Arabic. *International Journal of the Sociology of Language* 123: 101-118.
- Caubet, Dominique (2007). Moroccan Arabic. In *Encyclopedia of Arabic Language and Linguistics*, Volume 7, Lutz Edzard, Rudolf de Jong (eds.). The Netherlands: Brill.



- Colon, Georges (1947). Quelques ‘emprunts’ de morphèmes étrangers dans les parlers arabes occidentaux. *Groupe linguistique d’études Chamito-Sémitiques* IV.
- Dell, François & Mohamed Elmedlaoui (2002). *Syllables in Tashlhiyt Berber and in Moroccan Arabic*. Dordrecht: Kluwer.
- Echchadli, Malika (1986). *Les processus morphologiques et phonologiques des noms en arabe marocain*. MA thesis, Montréal, UQAM.
- El Hankari, Abdelhak (2014). The construct state in Tarifit Berber. *Lingua* 148: 28-52.
- Elmedlaoui, Mohamed (1992). *Aspects des représentations phonologiques dans certaines langues chamito-sémitiques*. Rabat: University Mohammed V Doctorat d’Etat Thesis.
- Elmedlaoui, Mohamed (2000). L’arabe marocain: Un lexique sémitique inséré sur un fond grammatical berbère. In *Études berbères et chamito-sémitiques: Mélanges offerts à Karl-G. Prasse*, S. Chaker & A. Zaborski (eds.), 155–187. Paris: Peeters.
- El Moujahid, El Houssain (1997). *Grammaire générative du berbère, morphologie et syntaxe du nom en tachelhit*. Publications de la faculté des lettres et des sciences humaines, Rabat.
- Ennaji, Moha (2001). The Construct State in Berber. *Studies in the Linguistic Sciences* 31/2: 55-72.
- Guay, F. (1918). La forme féminine berbère à Salé. *Archives berbères* 3: 31-51.
- Guerssel, Mohamed (1987). The status of lexical category preposition in Berber: implication for the nature of construct state. In Guerssel, M. & Hale, K. (eds.), *Studies in Berber Syntax*. MIT, Lexicon Project Working Papers, Cambridge, MA, pp. 159-190.
- Guerssel, Mohamed (1992). On the case system of Berber. *Canadian Journal of Linguistics* 37/2: 175-195.
- Guerssel, Mohamed (1995). Berber Clitic Doubling and Syntactic Extraction. *Revue Québécoise de Linguistique* 24/1: 111-133.
- Harrel, Richard (1962). *A short reference grammar of Moroccan Arabic*. Washington, DC: Georgetown University Press.
- Harrell, Richard & Harvey Sobleman (1963). *A dictionary of Moroccan Arabic: English*. Washington, DC: Georgetown University.
- Harris, John (1994). *English sound structure*. Oxford: Blackwell.
- Harris, Zellig (1942). The phonemes of Moroccan Arabic. *Journal of the American Oriental Society* 62/4: 309-318.

- Heath, Jeffrey (1997). Moroccan Arabic phonology. In *Phonologies of Asia and Africa*, Volume 1, Alan S. Kaye (ed.), 205-217. Indiana: Eisenbrauns.
- Honeybone, Patrick (2005). Sharing makes us stronger: process inhibition and segmental structure. In *Headhood, Elements, Specification and Contrastivity: Phonological papers in honour of John Anderson*, Philip Carr, Jacques Durand & Colin J. Ewen (eds). *Current Issues in Linguistic Theory* 259: 167–192.
- Jebbour, Abdelkrim (1996). *Morphologie et contraintes prosodiques en berbère (tachelhit de Tiznit) : analyse linguistique et traitement automatique*. Rabat: Université Mohamed V, Doctorat d'Etat thesis.
- Jebbour, Abdelkrim (1999). Syllable weight and syllable nuclei in Tachelhit Berber of Tiznit. *Cahiers de Grammaire* 24: 95-116.
- Kabbaj, Ouadia (1990). *La structure syllabique de l'arabe marocain*. MA thesis, UQAM.
- Kaye, Jonathan (1990). Government in Phonology: the case of Moroccan Arabic. *The Linguistic Review* 6: 131-159.
- Kaye, Jonathan (2000). *A user's guide to Government Phonology*. Manuscript, University of Ulster.
- Kaye, Jonathan, Jean Lowenstamm & Jean-Roger Vergnaud (1990). Constituent Structure and Government in Phonology. *Phonology* 7/2: 193-231.
- Kossmann, Maarten (1997). *Grammaire du parler berbère de Figuig*. Paris/Louvain: Peeters.
- Kossmann, Maarten (2017). Berber-Arabic language contact. In *Oxford Research Encyclopedia of Linguistics*. Oxford: Oxford University Press.
- Lahrouchi, Mohamed (2001). *Aspects morpho-phonologiques de la dérivation verbale en berbère tachelhit*. Ph.D. dissertation, University of Paris 7.
- Lahrouchi, Mohamed (2003). Manifestations gabaritiques dans la dérivation verbale en berbère tachelhit. *Recherches Linguistiques de Vincennes* 32 : 61-82.
- Lahrouchi, Mohamed (2013). Templates, markers and syntactic structure in Tashlhiyt Berber. *Lingua* 133: 53-72.
- Lahrouchi, Mohamed (2018a). Syllable structure and vowel-zero alternations in Moroccan Arabic and Berber. In *The Routledge Handbook of African Linguistics*, Augustine Agwuele & Adams Bodom (eds.), 168-180. Oxon, UK: Routledge.

- Lahrouchi, Mohamed (2018b). The left edge of the word in the Berber derivational morphology. *Glossa: a Journal of General Linguistics* 3/1: 1-25.
- Lahrouchi, Mohamed & Rachid Ridouane (2016). On diminutives and plurals in Moroccan Arabic. *Morphology* 26/2: 453-475.
- Lahrouchi, Mohamed & Philippe Ségéral (2010). Peripheral vowels in Tashlhiyt Berber are phonologically long: Evidence from Tagnawt. *Brill's Annual of Afroasiatic Languages and Linguistics* 2: 202-212.
- Lahrouchi, Mohamed & Shanti Ulfsbjorninn (2018). Formalising Headedness-Driven Phonotactics: English, French, Tarifit and Tashlhiyt Berber. PC, *Colloque du Réseau Français de Phonologie*, Paris.
- Lowenstamm, Jean (1991). Vocalic length and centralization in two branches of Semitic. In *Semitic Studies in Honor of Wolf Leslau on the Occasion of his 85th Birthday*, vol. 2, Alan S. Kaye (ed.), 949-65. Wiesbaden: Harrasowitz.
- Lowenstamm, Jean (1996). CV as the Only Syllable Type. In *Current Trends in Phonology Models and Methods*, Jacques Durand & Bernard Laks (eds.), 419-442. University of Salford: European Studies Research Institute.
- Ouhalla, Jamal (1988). *The syntax of head movement: A study of Berber*. Ph.D. dissertation, University College, London.
- Ouhalla, Jamal (1996). The construct state in Berber. In *Studies in Afroasiatic Grammar*, Jacqueline Lecarme, Jean Lowenstamm & Uri Shlonsky (eds.), 278-301. The Hague: Holland Academic Graphics.
- Scheer, Tobias (1996). *Une théorie de l'interaction directe entre consonnes*. PhD dissertation, Université Paris 7.
- Scheer, Tobias (2004). *A Lateral Theory of Phonology: What is CVCV, and why should it be?*, Studies in Generative Grammar 68/1. Berlin: Mouton de Gruyter.
- Taïfi, Miloud (1991). *Dictionnaire Français-Tamazight*. Paris: L'Harmattan.
- Tilmatine, Mohand (1999). Substrat et convergences: le berbère et l'arabe nord-africain. *estudios de dialectología nortáfricana y andalusí* 4: 99-119.
- Watson, Janet (2011). *The phonology and morphology of Arabic*. Oxford: Oxford University Press.

- Zellou, Georgia (2010). Moroccan Arabic consonant harmony: A multiple causation hypothesis. *Toronto Working Papers in Linguistics* 33: 1-15.
- Zellou, Georgia (2011). Moroccan Arabic borrowed circumfix from Berber: Investigating morphological categories in a language contact situation. In *Les frontières internes et externes de la morphologie*, Gregor Perko (ed.), 231-244. Ljubljana: Znanstvena založba Filozofske fakultete.