The Amazigh influence on Moroccan Arabic:
Phonological and morphological borrowing

Mohamed Lahrouchi
CNRS & Université Paris 8

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 /ŭ/ found in forms like *skŭt* 'shut up!' and *xŭbz* 'bread'[1] (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^wr* 'steal', *g^wmr* 'hunt, fish' and *alq^wnajn* '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', /zlliʒ/ > [ʒəlliʒ] '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) *Base noun*   *Profession noun*

    bəqqal   'grocer'   tabəqqalt

    sərraʒ   'saddler'   tasərraʒt

    bərraħ   'crier'   tabərraħt

    bənnaj   'mason'   tabənnajt

    χərraz   'shoemaker'   taχərrazt

    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

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[1] 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/, /ŭ/." The phonemic status of the two short vowels is subject to debate, as we will show in this paper.

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 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)	*Classical Arabic*	*Moroccan Arabic*	
i.	wa:faqa	wafəq	'he agreed'
	kita:b	ktab	'book'
	lisa:n	lsan	'tongue'
	ħabi:b	ħbib	'beloved'
ii.	fahima	fhəm	'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. *Classical Arabic*   *Tamazight* (Taïfi 1991)

    ʔalbaħr   ləbħərˤ   'the sea'

    balaɣa   bləɣ   'to grow up'

    ħadˤana   ħdˤən   'to supervise, place under wardship'

    sa:fara   safər   'to travel'

    ʔalba:b   lbab   'the door'

    ʔalfi:l   lfil   'the elephant'

b. *Tamazight native words*

    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)[2], 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
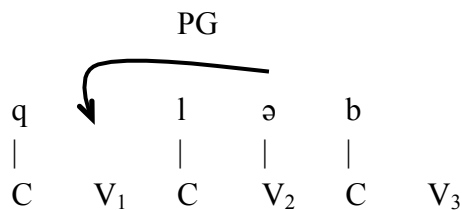
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[2] Based on minimal pairs like *ħəbb* 'he kissed' ≠ *ħŭbb* 'love', *ħəkk* 'he rubbed' ≠ *ħŭkk* 'small box', *nəqṛa* 'I will read' ≠ *nŭqṛa* 'silver', *ħərrˤ* 'more spicy than' ≠ *ħŭrrˤ* 'free', *nəssˤ* 'text' ≠ *nŭssˤ* 'half' and *xədˤrˤa* 'green (fem.)' ≠ *xŭdˤrˤa* 'vegetable', Aguadé (2010: 101) argues that the vowels /ŭ/ are /ə/ are phonemic in MA.

position of schwa within the word varies depending on the nature of the affixes added to the base: For instance, in the 3ʳᵈ masculine singular *ktəb* 'he wrote', schwa appears between the last two consonants, whereas in the corresponding feminine *kətbat* '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].[3]
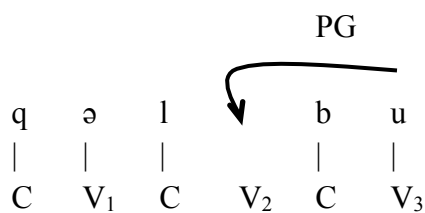
The behaviour of schwa in MA, just sketched out, makes its distribution largely predictable. Standard syllable-based analyses view it as an epenthetic vowel used to avoid complex codas (cf. Benhallam 1980, Boudlal 2001, and Echchadli 1986, among others).[4] An alternative is provided in Kaye (1990), 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' / *qəlbu* 'they upturned', represented below in (4), illustrates this kind of analysis (PG = Proper Government):

(4)

a.

$$
\begin{array}{cccccc}
& & \text{PG} & & & \\
q & & l & ə & b & \\
| & & | & | & | & \\
C & V_1 & C & V_2 & C & V_3
\end{array}
$$

b.

$$
\begin{array}{cccccc}
& & & \text{PG} & & \\
q & ə & l & & b & u \\
| & | & | & & | & | \\
C & V_1 & C & V_2 & C & V_3
\end{array}
$$

These representations, which use the strict CV approach to syllable structure (Lowenstamm 1996; Scheer 2004), clearly show that empty vocalic positions cannot be
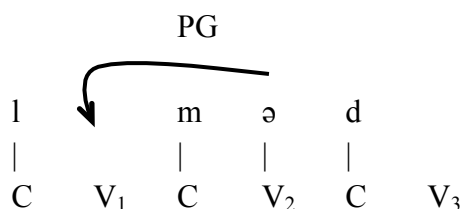
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[3] One could argue that in Colloquial French this form is viable without any schwa. Actually, this is possible to the extent that the deletion of schwa does not yield an illicit consonant cluster. To my knowledge, the four-consonant cluster that results from the omission of schwas is simplified by deleting the lateral consonant, leading to the form [kɛksmɛn] instead of *[kɛlksmɛn].

[4] 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).
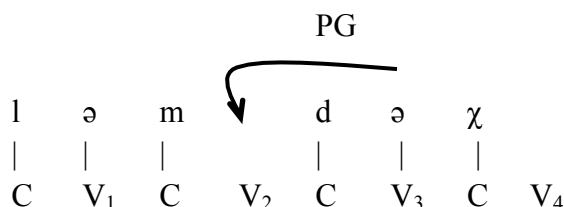
adjacent. Any sequence of two empty positions must realize one, depending on the government relation contracted with the neighbouring vowels (see Kaye *et al.* 1990 on government phonology). In (4a), V_3 is licensed to remain empty by virtue of being word-final. Properly ungoverned V_2 surfaces as schwa and then governs V_1. In (4b), the third plural marker –u associated to V_3 properly governs V_2, allowing it to remain phonetically inaudible. Then V_1, no more governed, surfaces as schwa. The same mechanism underlies the distribution of schwa in all Amazigh varieties[5], 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.

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              PG
         ┌────────┐
    l    ↓    m    ə    d
    |         |    |    |
    C   V₁   C   V₂   C   V₃
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b.

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                   PG
              ┌────────┐
    l    ə    m   ↓   d    ə    χ
    |    |    |       |    |    |
    C   V₁   C   V₂  C   V₃  C   V₄
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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_2 surfaces as schwa and then governs V_1. The same position properly governed by V_3 remains silent in (5b), while V_1 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.

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

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[5] 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.

Classical Arabic long vowels, attached to two positions, remained in MA (although they surface as short). The consonant clusters resulting form 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 [ŭ] 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)　　*Singular*　　　　　*Plural*

a.　　muʒa　　　　　mmʷaʒ　　　'wave'

　　　baliza　　　　　bbʷaləz　　　'suitcase'

　　　futˤɑ　　　　　ffʷatˤe　　　'towel'

　　　mula　　　　　mmʷalin　　　'owners'

　　　qoffa　　　　　qʷfaf　　　'straw basket'

b.　　aɣjjul　　　　　iɣʷjjal　　　'donkey'

　　　agru　　　　　igʷra　　　'frog'

　　　agajju　　　　　igʷjja　　　'head'

　　　aqammu　　　　　iqʷmma　　　'face (slang)'

　　　akbur　　　　　ikʷbar　　　'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)[6]. It is precisely the sharing of this element that allows the short /u/ in the singular forms to remain

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[6] 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.

as a secondary articulation on the preceding consonant in the plural.[7] 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. *Moroccan Arabic*   *Classical Arabic*

x^{w}əbz   xubz   'bread'

sk^{w}ət   ʔuskut   'shut up!'

sk^{w}ən   jaskunu   'he lives'

sk^{w}at   suku:t   'silence'

g^{w}ʕəd   ʔuqʕud   'sit down!'

b. *Amazigh (Tashlhiyt variety*)

Aorist   *Preterit*

knu   ik^{w}na

gru   ig^{w}ra

qlu   iq^{w}la

xlu   ix^{w}la

ag^{w}m   jugm

ak^{w}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 already contains headed labial element |U| (labials are headed by |U|, but not velars and uvulars).[8] 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-simiħ/ > [nsimiħ] '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.

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[7] 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.

[8] 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).

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*

	Verb	*Causative*	
a.	mun	smun	'pick up'
	gudi	sgudi	'put in a pile'
	nkr	ssnkr	'wake'
	nu	ssnu	'cook'
b.	kuʃm	ʃkuʃm	'paralyze'
	ħuʒʒu	ʃħuʒʒu	'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 whenever a voiceless consonant intervenes between the voiced sibilant and the causative prefix such as in *ʃħuʒʒu*.

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	~	ʒʒaʒ	'the glass'
sərˤʒəm	~	ʃərˤʒəm	'window'
sfənʒ	~	ʃfənʒ	'doughnut'
sfərˤʒəl	~	ʃfərˤʒəl	'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/ > [ʃʃfərˤʒəl] 'quince').[9] 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-ħʃʃm 'be ashamed' whose causative prefix immediately preceding the stem undergoes harmony. When the reciprocal prefix is added, the causative /s-/ remains unchanged.

(10) *Verb Causative   Reciprocal   Causative + Reciprocal*

ħʃʃm   ʃ-ħʃʃm   n-ħiʃʃim   s-n-ħiʃʃim   '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 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-ħʃʃm/ >> [ʃħʃʃm]   b. /s-m-ħiʃʃim/ >> [snħiʃʃim]

  ʃ ħ   ʃ   m   s   n   ħ i   ʃ   i m
  | | / \ | | | | | / \ | |
ᵥᵦ[CVCVCVCVCV]   CVᵥᵦ[CVCVCVCVCV]

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 *arraʒul-u* (nominative), *arraʒul-a* (accusative) and *arraʒul-i* (genitive) have all merged into one form in MA, namely *rrˁaʒəl* '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. *Base noun*　　　　*Diminutive*

aɣʷrab　　　　taɣʷrabt　　　'wall'

akur　　　　takurtt　　　'ball'

agajju　　　　tagajjut　　　'head'

amzzʕuɣ　　　　tamzzʕuɣt　　　'ear'

afarnu　　　　tafarnut　　　'type of oven'

b. *Agentive noun*　　　　*Abstract noun/profession*

anddʕam　　　　tanddʕamt　　　'poet, poetry'

agzzar　　　　tagzzart　　　'butcher, butchery'

abnnaj　　　　tabnnajt　　　'builder, masonry'

afllaħ　　　　tafllaħt　　　'farmer, agriculture'

abrraħ　　　　tabrraħt　　　'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 *tafllaħt*. 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. *Base noun*　　　　*Profession*

χərraz　　　　taχərrazt　　　'shoemaker, shoe repairing'

fəllaħ　　　　tafəllaħt　　　'farmer, agriculture'

nəʒʒarʕ　　　　tanəʒʒarʕt　　　'carpenter, carpentry'

ʃəffarʕ　　　　taʃəffarʕt　　　'thief, thievery'

xəbbaz　　　　taxəbbazt　　　'baker, bakery'

bəqqal	tabəqqalt	'grocer, grocery'

b. *Base noun*   *Abstract noun / quality*

kəddab	takəddabit	'liar, lying'
ħrˤam	taħħrˤajmit	'forbidden, cunningness'
məɣrib	tamɣrabit	'Morocco, act of being Moroccan'
ʕəzri	taʕəzrit	'bachelor, bachelorhood'
rˤaʒəl	tarˤʒlit	'man, bravery'
fdˤuli	tafdˤulit	'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. *tanddˤamt* (sg) / *tinddˤamin* (pl) 'poetry', *taħħrajmit* (sg) / *tiħħrajmijin* (pl) 'cunningness'). Plurals of this type are even rarer in MA; the only case I have been able to find is *taħħrˤajmijat* (< *taħħrˤajmit* (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 *nəʒʒarˤ* along with its corresponding profession name *tanəʒʒarˤt* can be in free variation with *nʒʒaˤr* and *tanʒʒarˤt*, respectively. Likewise, *ʃəffarˤ* and *taʃəffarˤt* can be realized as *ʃffarˤ* and *taʃffarˤt*. 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 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.

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