

Backformation as Root Extraction in Moroccan Arabic Loanwords*

Zoubida Ziani

Mohammed V University, Rabat

Faculty of Letters and Human Sciences

*L'objectif de cet article est d'analyser la dérivation régressive en arabe marocain comme moyen de formation des verbes à partir d'emprunts nominaux. Nous mettrons l'accent sur l'extraction de la racine comme processus de base pour cette opération. A titre d'exemple, le verbe *kastəm* est dérivé du nom emprunté au français *kustim* 'costume'. L'article montre que cette extraction des racines est très pertinente pour les débats portant sur la base de la morphologie sémitique: la racine consonantique, le mot ou les deux. La principale revendication de l'article est que la dérivation régressive des emprunts en arabe marocain fournit des preuves solides pour la racine comme unité de base de la représentation morphologique / lexicale.*

1. Introduction

Moroccan Arabic (MA) and other Semitic languages such as Hebrew are known for their non-concatenative morphology. In these languages, words are formed based on a consonantal unit called the root. On its own, the root is unpronounceable. Only when combined with a pattern of vocal elements does it become pronounceable (Ussishkin, 1999; Boudlal, 2001; Arad, 2005). By way of illustration, let us consider the typical example of the root \sqrt{ktb} in MA. The three consonants, which carry a meaning related to writing, have different patterns such as: *ktāb* 'he wrote', *kattāb* 'make someone write' and *ktāba* 'writing', among others. In this paper, we examine the notion of the root with regard to backformation from

* The analysis in this paper is part of an ongoing doctoral dissertation on the morphology of loanwords. I am grateful to Karim Bensoukas for his constructive feedback and insightful comments, which greatly improved the manuscript. Special thanks to Fatima El Hamdi and Badr Eddine El Asri Traiki for their assistance with and discussion of this research. I have also benefited from the comments of two anonymous Asinag reviewers. All remaining errors are my own.

French loanwords in MA.¹ In MA, a number of verbs are formed by backformation from borrowed nouns. An example is the verb *kəstəm*, which is derived from the French adapted loan-noun *kustim* (from *costume* ‘suit’). The operation consists of extracting the consonantal root (\sqrt{kstm}) from the loanword. Once nativized, the verb appears with the syllable structure of Moroccan Arabic, with schwas epenthesized between every two consonants. The verb then sounds like the native verbs *fərfəx* ‘to break something or beat up someone’ or *bərgəg* ‘to gossip’.

This article provides an account for backformation in loanwords in Moroccan Arabic. It argues that the operation consists in forming a verb by extracting a consonantal root from an integrated loan-noun. We claim that this process provides evidence for the consonantal root as a base of derivation. The paper, hence, contributes to the ongoing debate as to whether Semitic morphology is based on the consonantal root, the word, or both (Ussishkin, 1999, 2006; Prunet, 2006; Bat-El, 1994, 2003; Ratcliffe, 1997 and others). The main claim of this paper is that the root is the basic unit in morphological/lexical representation.

This paper is divided into five sections. After the introduction, we present in section 2 the different views with regard to the notion of the root, particularly the consonantal root. Section 3 presents data from loan verbs derived from French loan nouns based on the process of backformation via root-extraction. We claim in section 4 that the extracted consonantal root serves as a base of derivation for other morphological categories (the medio-passive, the passive participle, and the deverbal noun), in analogy with MA respective patterns. We also examine internal gemination and claim it to provide further evidence in favor of the extraction of the consonantal root and its serving as the base of derivation in MA. By way of illustration, we provide examples from causatives derived from loan verbs. We recapitulate the findings in section 5.

2. Root-based vs. word-based approaches to Semitic morphology

Prunet (2006) defines the “root” as the morphological unit that is left once all the affixes have been removed from the word. According to Arad (2003), roots are the atomic non-decomposable lexical elements of a language, serving as the building blocks of more complex words. If the root consists of consonants only, it is called a “consonantal root”, while if it also contains vowels, then it is referred to as a

¹This paper examines loanwords from the Rabat-Casablanca dialects of MA, mostly French loans. Northern dialects, which are influenced by Spanish and contain Spanish loans, are not the focus of this work.

“syllabic root” (Arad, 2003; Prunet, 2006). For the purposes of this paper, the focus will be on the consonantal root.

The consonantal root is a widely controversial concept especially in Semitic languages. Prunet (2006) provides a critical review of different theoretical and psycholinguistic works, including Prunet et al. (2000) and Davis and Zawaydeh (2001). The findings reveal that, in the case of speech errors and language games, only root consonants are reversed. Similarly, data from hypocoristics (nicknames) show that the consonants in the full name and in the hypocoristic form are the same three consonants of the lexical root (Davis and Zawaydeh, 2001). The previous research provides strong evidence for the existence of an abstract discontinuous consonantal root and, thus, of an unpronounceable entity (Prunet et al., 2000; Prunet, 2006; Schluter, 2013; Diab and Marton, 2014).

A unique feature of Semitic languages such as Arabic and Hebrew is the combination of roots and patterns, a type known as root-and-template morphology (McCarthy, 1981, for example). In this model, words are formed when roots are combined with a template and vocalic morphemes. In some languages, as is the case in MA, there is only a root and a template with epenthetic vowels (ə in MA). The consonantal root is also considered as a morpheme carrying the meaning of the words containing this root (Prunet, 2006). For instance, the three radicals *k t b* in Arabic and Hebrew constitute a root related to writing. The root in Arabic is mostly triconsonantal but can also be biconsonantal or quadriconsonantal.

In opposition to these root-based approaches, scholars like Bat-El (1994, 2003), Ratcliffe (1997), and Ussishkin (1999) argue for a word-based view of Hebrew morphology that does away with the consonantal root. They analyze patterns of denominal verb formation, showing that only a word-based account can explain otherwise mysterious phonological regularities. They question the role of the consonantal root in the derivation and suggest word formation from existing words (Bat-El, 1994, 2003; Ussishkin, 1999).

In this paper, we argue that the consonantal root is the base of derivation in MA on the basis of evidence provided from verbs derived through backformation from loan nouns in MA.

3. Backformation from loan-nouns as root extraction

In (1), we provide examples of loan verbs that are derived from French loan nouns on the basis of backformation via root-extraction. Backformation is a word formation process described as “the coining of a new word by taking an existing word and forming from it a morphologically more elementary word” (Staskova, 2013:9)². It is also called back-derivation, retrograde derivation or diaffixation.

² For an extensive study of backformation see Campbell (1998), Staskova (2013), and Mattiello (2013).

According to Mattiello (2013), creating new words via backformation may be the outcome of reanalysis of supposedly complex foreign forms in analogy with the native inflectional patterns. For instance, Old Northern French *cherise* (Modern French *cerise*) has been reanalyzed in English as a singular form *cherry* in addition to the plural suffix *-s*, following the plural formation pattern in English.

In (1) below, we present cases of backformation in MA based on French loan-nouns, and derivation on verbs therein.

(1) Loan- Noun Origin/ Gloss	Root	Verb	Gloss
kustim < <i>costume</i> 'suit'	√kstm	kəstəm	'wear a suit'
garʃun < <i>garçon</i> 'waiter'	√grʃn	gərʃən	'serve as waiter'
grafata < <i>cravate</i> 'tie'	√grft	gərfət	'wear a tie'
randifu < <i>rendez-vous</i> 'appointment'	√rndf	rəndəf	'have an appointment'
ʃɪfwər < <i>sechoir</i> 'hair dryer'	√ʃfwr	ʃəfwər	'use a hair dryer'

We notice that, although the loan nouns contain both vowels and consonants, only the consonants are extracted for the derivation of verbs, in analogy with existing native verbs such as √trʒm 'translate', √frɔʒ 'explode', and √krkb 'roll'. Marchand (1969) stresses the role of analogy as a supportive element to the formation of a verb where the noun exists but the verb does not (cited in Staskova, 2013).

It is well-known that loanwords undergo a normal process of phonological and morphological adaptation to comply with the recipient language's linguistic system (Haugen, 1950; Weinreich, 1953; Silverman, 1992; Yip, 1993; Thomason and Kaufman, 1988; Paradis and LaCharité, 2005, 2008; and Matras, 2009)³. Silverman (1992) suggests two stages for the integration of a loanword. First, there is the 'perceptual level', where native speakers detect the unprosodic signals of the donor language. The perceived input moves to the 'operative level', where 'true phonological processes' may apply, including the native prosodic constraints on syllable structure.

In the same fashion, French loans in MA are adapted in conformity with the MA syllable structure. Schwa is, thus, epenthesized to break the consonantal clusters that are banned in the language. Benhallam (1980) suggests two types of syllabification in MA: full vowel syllabification [i, u, a] and an epenthetic schwa syllabification. A CVC syllable structure assigned to every string of unsyllabified

³ Loanword adaptation has not been treated in detail in this paper since focus is on post-loan integration. For ample details on loanword adaptation, see Haugen (1950), Weinreich (1953), Silverman (1992), Yip (1993), Thomason and Kaufman (1988), Paradis and La Charité, (2005, 2008), and Matras (2009).

Second, the passive participle (PP) in MA is obtained through the prefixation of the morpheme *m-* to a verb root. Similar to the medio-passive data above, schwa is epenthesized to complete the phonetic shape of the loans. The following set shows how passive participles are derived in analogy with native PP, on the basis of the consonantal roots extracted from French nouns. Examples of native passive participles include *m-kərfəʃ* ‘in a deteriorated state’, *m-bəʔqəʃ* ‘stained’, *m-xənzəʔ* ‘frowning’, and *m-xəʔwəʔ* ‘messy’:

(4)	<i>Root</i>	<i>Passive participle</i>	<i>Origin</i>	<i>/Gloss</i>
	√ʔntk	m-ʔəntək	antique	‘elegant/dressed up’
	√grfʔ	m-gərfəʔ	cravatte	‘tie’
	√kstm	m-kəstəm	costume	‘suit’
	√rndf	m-rəndəf	rendez-vous	‘appointment’
	√ʃfwr	m-ʃəfwəʔ	sechoir	‘hairdryer’

Third, the deverbal noun of quadrilateral verbs in MA is usually formed by the insertion of *-i-* between the last two consonants of the derived quadrilateral form. Some examples from MA deverbal nouns include *tʃəʔgiʃ* derived from the root √ʃrgʃ ‘explode’ and *tʃəʔkil* derived from √ʃrkl ‘to writhe, to flounder’ (Harrell, 1968).

(5)	<i>Root</i>	<i>Deverbal noun</i>	<i>Origin</i>	<i>/Gloss</i>
	√ʔntk	tʔəntik	antique	‘elegant/dressed up’
	√grfʔ	tɡərfit	cravatte	‘tie’
	√grʃn	tɡərʃin	garçon	‘waiter’
	√kstm	tkəstim	costume	‘suit’
	√rndf	trəndif	rendez-vous	‘appointment’
	√ʃfwr	tʃəfwir	sechoir	‘hairdryer’

It can be argued that the above data present very simple examples of backformation in the sense that once the consonant is extracted, it serves as a base of derivation for various morphological categories in a quite straightforward fashion. The next sections provide more intricate cases in which the extracted root plays a crucial role.

4.2. Root-and-pattern morphology

In (6), we present other categories, i.e. medio-passive, passive participle, and verbal noun, derived from the triconsonantal roots extracted from loan nouns. For their derivation, roots are combined with MA patterns to form respectively the medio-passive, the passive participle and the verbal nouns in analogy with native words such as *tʃuhəl* ‘he acted stupidly’, *m-buhəl* ‘stupid’, *tʃuhil* ‘stupidity’ or *t-*

kusəl ‘he became lazy’, *m-kusəl* ‘lazy’, and *tkusil* ‘laziness’, which are respectively derived from the roots \sqrt{bhl} and \sqrt{ksl} initially on the pattern $CuCaC^5$.

We will go back to our data, which is divided into four sets: (6i), (6ii), (6iii) and (6iv), including the above mentioned categories, namely the medio-passive, the passive participle, and the deverbal noun. These data sets illustrate the productivity of the extracted roots.

(6i)Root	Medio-passive	Origin	/Gloss
\sqrt{bgs}	tt- <i>buğəş</i>	beau gosse	‘handsome’
\sqrt{sfz}	tt- <i>şufəz</i>	sauvage	‘savage’
\sqrt{fmr}	tt- <i>şumər</i>	chomeur	‘jobless’
\sqrt{bdr}	tt- <i>budər</i>	poutre	‘a physically strong person’
\sqrt{sgr}	tt- <i>sugər</i>	seguro (Spanish)	‘to ensure; to be ensured’
\sqrt{kfr}	tt- <i>kufər</i>	coup franc	‘free kick’

In (6i), the medio-passive is formed in analogy with native medio-passives derived from triconsonantal roots such as \sqrt{bhl} *tt-buhəl* stated above.

Similarly, in (6ii) the passive participle of the loan verbs is expressed as the native *m-kusəl* derived from the root \sqrt{ksl} .

(6ii) Root	Passive participle	Origin	/Gloss
\sqrt{bgs}	m- <i>buğəş</i>	beau gosse	‘handsome’
\sqrt{sfz}	m- <i>şufəz</i>	sauvage	‘savage’
\sqrt{fmr}	m- <i>şumər</i>	chomeur	‘jobless’
\sqrt{bdr}	m- <i>budər</i>	poutre	‘physically strong person’
\sqrt{sgr}	m- <i>sugər</i>	seguru (Spanish)	‘to ensure; ensured’
\sqrt{kfr}	m- <i>kufər</i>	coup franc	‘free kick’

The deverbal noun in (6iii) is formed in analogy with MA pattern in *tkusil* and *tbuhil*.

(6iii) Root	Deverbal noun	Origin	/Gloss
\sqrt{bgs}	t <i>buğiş</i>	beau gosse	‘handsome’
\sqrt{sfz}	t <i>şufiż</i>	sauvage	‘savage’
\sqrt{fmr}	t <i>şumir</i>	chomeur	‘jobless’

⁵ One of the reviewers raised the question with regard the vowel [u] in the passive participle pattern. Why is this vowel used with triconsonantal roots but not quadrilateral roots? In his treatment of the passive participle in Casablanca Moroccan Arabic dialect, Boudlal (2001) holds that the vowel [u] is epenthized for prosodic purposes, namely those related to syllable weight. The grammar of MA requires the verb to be bimoraic. This is what forces the epenthesis of the vowel [u] in the case of triconsonantal roots. Quadrilateral verb stems, on the other hand, conform to a bisyllabic iambic foot of the type LL, where both syllables are major syllables (ibid.)

√bdr	tbudir	poutre	‘physically strong person’
√sgr	tsugir	seguru	‘to ensure; to be ensured’
√kfr	tkufir	coup franc	‘free kick’

In (6i), (6ii) and (6iii), we listed the by now familiar French loanwords. In (6iv) the triconsonantal root √srt is derived from the Amazigh loan noun *t-a-s-arut* ‘key’.

(6iv) Root	Medio-passive	Passive participle	Origin/ Gloss
√srt	t-surət	m-surət (a)	tasarut (Amazigh) ‘key’

In Amazigh, the circumfix *t...-t* is a feminine marker, *-a-* is an inflection affix, *s-* is a derivational affix denoting an instrument. An explanation of the borrowing of the loan-noun *sarut* could be based on the verb *ri* meaning in some Amazigh varieties ‘to open’⁶. We notice that when borrowed into MA, and following phonological adaptation, the form *sarut* was borrowed as an integral base and integrated into the language. The interesting fact, which also stands as further evidence for the existence of the consonantal root, is that the consonants *s r t* were adopted as radicals regardless of the affixal status of *-s-* and *-t-*. Considered as root consonants, *s r t* are extracted from the borrowed noun and the verb *surət* ‘lock’ is derived via the process of backformation.

It is worth noting that in the derivation of *surət*, *sarut* comes in analogy with native words such as *fusəx* ‘to burn incense to remove evil deed’, from *fasux* ‘incense’ (see also *tfusix* ‘use of incense’) and *musəq* ‘make someone listen to music’, derived from *musiqā* ‘music’ and related to *tmusiq* ‘listening to music’. The phenomenon witnessed in the derivation and integration of the Amazigh loan *surət*, as a basic form regardless of the attached affixes, is known in historical linguistics as folk etymology, whereby speakers change the form of a loanword, as a result of mistaken assumptions, to adapt it to a more familiar form through popular usage (Campbell, 1998). Consequently, nonexistent underlying bases are extracted and added to the lexical stock via the process of backformation (Beard, 1995).

The facts in (6) provide evidence for two major characteristics: first, the productivity of backformation as a word formation process and second, the existence of the consonantal root as the basic unit carrying meaning and serving as the base of derivation. Yet, some back-formed words can show their grammatical limitation in the sense that some of their forms are not accepted by the native speakers while others are (Katamba, 1994 cited in Staskova, 2013).

⁶ Karim Bensoukas (p. c.) suggests that the Amazigh noun *tasarut* may also be analyzed as containing the verb *aru*, which may have had the general meaning of ‘pass through a canal’ and currently meaning ‘to give birth’.

In the next section we examine a non-concatenative process, internal morphological gemination, and claim it to provide further evidence in favor of the extraction of the consonantal root and serve as the base of derivation in MA.

4.3. The extracted consonantal root and internal morphological gemination

Internal gemination provides another strong argument for the fact that a consonantal root extracted from a loan-noun through backformation is used as the base of derivation in the formation of causative verbs. For the sake of clarity, we will have a short digression into MA causative verbs⁷.

Causatives in MA are formed by doubling (geminating) the second segment of the base form (Boudlal, 2001). Determining the base of derivation of causatives in MA has been one of the intriguing questions for different scholars (McCarthy and Prince, 1986, 1988, 1990; Lombardi and McCarthy, 1991; Bennis, 1992; Boudlal, 2001). Bennis (1992) argued that the stem is the base of derivation of causatives in MA. He claims that the causative is formed through the affixation of a bimoraic syllable to a circumscribed prosodic domain, namely the minimal base. The latter can be of the type CəC or CV. In MA, every morphological causative verb takes the form of one of these two patterns: CəCCəC for sound roots or CəCCV for weak roots as illustrated in (7) and (8) below.

(7) Sound roots (CəCCəC)

Root	Gloss	Causative
√ktb	'write'	kəttəb
√brd	'cold'	bərrəd
√nʕs	'sleep'	nəʕʕəs
√šbr	'be patient'	šəbḥər
√frh	'be happy'	fərrəh

(8) Weak roots (CəCCV)

Root	Gloss	Causative
√qr(v)	'read'	qərrī
√bk(v)	'cry'	bəkki
√d(v)x	'feel dizzy'	dəwwəx
√d(v)b	'melt'	dəwwəb
√f(v)q	'wake up'	fəjjəq

We cannot discuss the formation of causatives in MA without considering germination.⁸ Noamane (2013) suggests two types of gemination in MA:

⁷ For further details about causatives in MA, see Bennis (1992) and references therein.

⁸ A thorough treatment of gemination in MA can be consulted in Benhallam (1980), Bennis (1992), Boudlal (2001) and references cited therein.

phonological and morphological. The first type of geminates is derived via the process of assimilation. The author provides examples for two cases of assimilation: there is the assimilation of the definite article affix /l+/ and word initial coronal sounds including dental, alveolar and postalveolar consonants as in /l-ɖar/, **ɖɖar**, ‘the house’, and /l-suq/, **ssuq**, ‘the market’. The second type involves the assimilation of the first person singular suffix [t] to the last consonant of the verb attached to it; for example, /ʃəf-t/ becomes **ʃətt** ‘I saw’ (for more examples see Noamane 2013). The second type of gemination is morphological gemination. It constitutes the main interest of the present paper as it is a key element in the formation of causatives in MA.

In the present paper, we argue for a root-based approach of causative derivation in MA. We provide data from causatives derived from loan verbs as evidence. The first type of causatives derived from loans consists of sound roots. Sound roots are defined as roots that are composed of three consonants not including glides, for example \sqrt{qtl} ‘kill’ and \sqrt{drb} ‘hit’ (Bennis 1992).

(9) Root	Causative	Origin	/Gloss
\sqrt{mzk}	məzzək	musique	‘music’
$\sqrt{mṅk}$	məṅṅək ⁹	manque	‘missing something’

In (9) above, the causative forms *məzzək* and *məṅṅək* follow the same pattern of causative derivation in MA (CəCCəC). They are derived respectively from the sound roots \sqrt{mzk} and $\sqrt{mṅk}$. The same roots are derived from the French loan nouns *musique* ‘music’ and *manque* ‘missing something’ via the process of backformation. McCarthy (1981) suggests that the link between a ‘derived verb’ and its derivational source is the root. An example adapted from Bennis (1992) is provided in (10):

(10) Derivational source	→	root	←	derived verb
hɖər ‘talk’	→	hɖr	←	həɖɖər ‘make someone talk’

The second type of causatives derived through backformation consists of verbs derived on the basis of weak roots. Bennis (1992) defines weak roots as roots which contain a median or final vocalic element alternating with a glide. Examples are in (11):

(11) Root	Gloss	Causative	Origin	/Gloss
$\sqrt{buṭ}$	‘kick’	bəwwəṭ	botte	‘kick’
$\sqrt{duʃ}$	‘shower’	dəwwəʃ	douche	‘shower’
$\sqrt{ʃik}$	‘elegant’	ʃəjjək	chique	‘elegant’

⁹ One of the reviewers suggests that the root $\sqrt{mṅk}$ could also be based on the French verb ‘manquer’ ‘to miss someone or something’.

According to Bennis (1992), MA weak roots with median glides, as well as final ones, may be realized as vowels as in:

- (12) *dwz* ‘to pass’ *daz / duz* *duwwəz* ‘make pass’
 zrj ‘to run’ *zra / zri* *zərraj* ‘runner’

This hypothesis suggests that the vowels appearing in the surface form are derived from the corresponding underlying glides. Verbs like *ʃuf* ‘see’ and *bki* ‘cry’ are respectively derived from the roots $\sqrt{ʃwf}$ and \sqrt{bkj} . A counter hypothesis suggested by one of the reviewers of this paper holds that vowels can be underlying and they change into the corresponding glides to satisfy syllable structure constraints. Our position supports Bennis’s idea; hence, we assume that the surface vowels are underlyingly glides. In (11) above, we suggest, following Bennis (1992), that the hollow roots \sqrt{but} , \sqrt{duf} and $\sqrt{ʃik}$ are underlyingly $\sqrt{bwʔ}$, $\sqrt{dwʃ}$, and $\sqrt{ʃjk}$, and they follow the same pattern of causative derivation in MA (CəCCəC). Also, schwa epenthesis applied to break the consonantal cluster disallowed in MA stands as evidence for the consonantal status of the root.

5. Conclusion

This article provides an account for backformation in loanwords in Moroccan Arabic. It argues that the operation consists in forming a verb by extracting a consonantal root from an integrated loan-noun. We presented data which showed that the extracted verbal root serves as a base for the derivation of other morphological categories (the medio-passive, the passive participle, and the deverbal noun), in analogy with the native patterns of derivation. The data revealed that although the loan nouns contain both vowels and consonants, only the consonants are extracted for the derivation of verbs, in analogy with existing native verbs. Also, the non-Semitic origin of the loan nouns stands as further evidence for a process of root extraction since only the consonants of the word were extracted for the verb derivation. We then examined data from causatives formed through internal morphological gemination of the consonantal root extracted from loan-nouns through backformation. For both sound roots and weak roots, the causative was derived following the MA causative pattern CəCCəC. The internal gemination of the glides *-ww-* and *-jj-* provides another argument in favor of the consonantal root in MA, given the fact that vowels cannot be geminated. The insertion of schwa supports the same argument since it serves to break consonantal strings banned in MA. In sum, the presentation and analysis of the loan data extracted via backformation proves, on the one hand, that the root is consonantal in MA, and that it is the base of derivation, on the other. The paper, hence, contributes to the ongoing debate as to whether Semitic morphology is based on the consonantal root, the word, or both. Backformation as root extraction provides strong evidence for a root-based morphology in MA.

References

- Al Ghadi, A. (1994), "An Optimality Account of Moroccan Arabic Prosody", MS, University of Delaware.
- Arad, M. (2003), "Locality Constraints on the Interpretation of Roots: the Case of Hebrew Denominal Verbs", *Natural Language & Linguistic Theory* 21, pp. 737–778.
- Arad, M. (2005), *Root and Patterns, Hebrew Morpho-syntax*, Dordrecht, Springer.
- Bat-El, O. (1994), "Stem Modification and Cluster Transfer in Modern Hebrew", *Natural Language and Linguistic Theory* 12, pp 571- 596.
- Bat-El, O. (2003), "The Fate of the Consonantal Root and the Binyan in Optimality Theory", *Recherches Linguistiques de Vincennes* 32-2003, pp.31-60.
- Beard, R (1995), *Lexeme-Morpheme Base Morphology: a general theory of inflection and word formation*, (SUNY Series in Linguistics), Albany, NY: SUNY Press, 1995, pp. xvi+433.
- Benhallam, A. (1980), *Syllable Structure and Rule Types in Arabic*, PhD Dissertation: University of Florida.
- Benhallam, A. (1989/1990), "Moroccan Arabic Syllable Structure", *Langues et Littératures* 8, pp.177-191.
- Bennis, S. (1992), *La formation du Causatif en Arabe Marocain*, Mémoire de DES Faculté des Lettres, Rabat.
- Bensoukas, K. and Boudlal, A. (2012a), "The Prosody of Moroccan Amazigh and Moroccan Arabic: Similarities in the Phonology of Schwa", In Borowsky, T. et al. (eds.), *Prosody Matters: Essays in Honor of Lisa Selkirk*, 3-42. London: Equinox.
- Bensoukas, K. and Boudlal, A. (2012b), "An Amazigh Substratum in Moroccan Arabic: The Prosody of Schwa", *Langues et Littératures* 22, pp. 179-221.
- Boudlal, A. (2001), *Constraint Interaction in the Phonology and Morphology of Casablanca Moroccan Arabic*, Doctoral Dissertation, Mohammed-V University, Faculty of Letters, Rabat.
- Campbell, L. (1998), *Historical Linguistics: an Introduction*, Massachussets, Edinburgh University Press Cambridge, MIT Press.
- Davis, S. and Zawaydeh, B. (1999), "A descriptive analysis of hypocoristics in Colloquial Arabic", *Language and Linguistics* 3, pp. 83–98.
- Davis, S. and Zawaydeh, B. (2001), "Arabic Hypocoristics and the Status of the Consonantal Root", *Linguistic Inquiry* 32, pp. 512-520.

- Diab, M. and Marton, Y. (2014), "Semantic Processing of Semitic Languages", I. Zitouni (ed), *Natural Language Processing of Semitic Languages, Theory and Applications of Natural Language Processing*, Redmond, WA, USA.
- Harrell, R. S. A (1968), *Short Reference Grammar of Moroccan Arabic With Audio CD*, Washington, D.C.: Georgetown University Press.
- Haugen, E. (1950), "The Analysis of Linguistic Borrowing", *Language*, 26, (2), pp 210-231, Linguistic Society of America.
- Katamba, F. (1994), *English Words*, London: Routledge.
- La Charité, D. and C. Paradis (2005), "Category preservation and proximity versus phonetic approximation in loanword adaptation", *Linguistic Inquiry* 26, pp. 223-258.
- Lombardi, L. and McCarthy, J. (1991), "Prosodic Circumscription in Choctaw Morphology", *Phonology* 8, pp. 37-71.
- Marchand, H. (1969, 2nded.), *The categories and types of present-day English word-formation*, München: C.H. Beck.
- Matras, Y. (2009), *Language contact*, Cambridge Textbooks in Linguistics, Cambridge: Cambridge University Press.
- Mattiello, E. (2013), *Extra-grammatical Morphology in English: Abbreviations, Blends, Reduplicatives, and Related Phenomena*, Berlin, De Gruyter Mouton.
- McCarthy, J. (1981), "A Prosodic Theory of Nonconcatenative Morphology", *Linguistic Inquiry* 12, pp. 373-418.
- McCarthy, J. and A. Prince (1986), "Prosodic Morphology", ms, Univ. of Massachusetts and Brandeis Univ.
- McCarthy, J. and A. Prince (1988), "Quantitative Transfer in Reduplicative and Templatic Morphology", in *Linguistic Society of Korea*, ed., Seoul, Linguistics in the Morning Calm 2, Hanshin Publishing Co., pp. 3-35.
- McCarthy, J. and A. Prince (1990), "Foot and Word in Prosodic Morphology: the Arabic Broken Plural", *Natural Language and Linguistic Theory* 8, pp. 209-283.
- Noamane, A. (2013), *Aspect of the Morpho-phonology of Causative Verbs in Moroccan Arabic*, Master Thesis, Mohamed V University, Rabat.
- Ouhalla, J. (2016), "Root-Extraction, Roots, Verbs and Nouns 'Need' in Arabic", *Brill's Journal of Afroasiatic Languages and Linguistics* 8, pp. 200-222.
- Paradis, C. et D. LaCharité, 2008, "Apparent Phonetic Approximation: English Loanwords in Old Quebec French", *Journal of Linguistics* 44, pp. 87-128.
- Prunet J-F. et al (2000), "The mental representation of Semitic Words", *Linguistic Inquiry*, Volume 31, Number 4, pp. 609-648.

- Prunet, J-F (2006), "External Evidence and the Semitic Root", *Morphology 16*, pp. 41-67.
- Ratcliffe, Robert, R. (1997), "Prosodic templates in a word-based morphological analysis of Arabic", In *Perspectives on Arabic linguistics X*, ed. Mushira Eid and Robert R. Ratcliffe, pp. 147–171, Amsterdam: John Benjamins.
- Schluter, K.T. (2013), *Hearing Words Without Structure: Subliminal Speech Priming and the Organization of the Moroccan Arabic Lexicon*, PhD Dissertation.
- Silverman, D. (1992), "Multiple scansions in loanword phonology: Evidence from Cantonese", *Phonology*, 9, pp. 289-328.
- Staskova, N. (2013), *English Back-formation. Recent Trends in Usage. A comprehensive study of English back-formation in the 20th and the early 21st century*, Ph.D Dissertation.
- Thomason, S. G and T. Kaufman (1988), *Language Contact, Creolization and Genetic Linguistics*, Berkeley, University of California Press.
- Ussishkin, A. P. (1999), "The Inadequacy of the Consonantal Root: Modern Hebrew Denominal Verbs and Output-output Correspondence", *Phonology 16*, pp. 401- 442.
- Ussishkin, A. (2006), "Semitic Morphology: Root-based or Word-based?" *Morphology 16*, pp. 37-40.
- Weinreich, U. (1953), *Languages in Contact: Findings and Problems*, The Hague: Mouton.
- Zawaydeh, B. and Davis S. (1999), "Hypocoristic Formation in Ammani-Jordanian Arabic", In *Perspectives on Arabic linguistics XII*, ed. Elabbas Benmamoun, pp. 113–139, Amsterdam: John Benjamins.
- Yip, M. (1993), "Cantonese loanword phonology and Optimality Theory", *JEAL 2*, pp. 261-291.