

Pseudometathesis in three Standard Arabic broken-plural templates¹

Youssef A. Haddad

Abstract

This paper suggests that what McCarthy and Prince (1990), following Levy (1971), call consonant-vowel METATHESIS in three Standard Arabic broken-plural templates is more likely a two-step diachronic process of PSEUDOMETATHESIS in the sense of Blevins and Garrett (1998). This process is characterized by vowel deletion followed by vowel insertion. Evidence from present-day dialects, mainly Lebanese Arabic and Moroccan Arabic, is used to argue that this alternative analysis is the more plausible analysis.

1 Introduction

Phenomena exist in natural languages that cannot be explained language-internally. In order to explain such phenomena, a researcher may want to look at related languages or dialects to see whether or not they are capable of providing answers. One example is *Ca* Metathesis in the three Standard Arabic (hereafter SA) broken-plural templates: [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC].

Arabic has two types of plural: sound and broken. Sound plural is formed via suffixation. Masculine nouns take on the masculine plural suffix *-uu(n)/-ii(n)*. For example, the plural form of *fallaaḥ* ‘male peasant’ is *fallaaḥ-uun*. Feminine nouns drop the feminine marker *-a(t)* and take on the feminine plural suffix *-aat*. For example, the plural form of *fallaaḥ-a(t)* ‘female peasant’ is *fallaaḥ-aat*.

Whereas sound plural involves suffixation, the more prevalent broken plural involves changes in the stem – which may or may not include suffixation – in accordance with thirty-one patterns or templates. For example, the plural form of *bajt* ‘house’ is *bujuut*, but that of *kalb* ‘dog’ is *kilaab*.

In order to provide a systematic analysis of how SA employs these templates, McCarthy and Prince (1990) apply the theory of Prosodic Morphology to the SA

Table 1. Unmetathesized input vs. metathesized output.

	Unmetathesized Input		=>	Metathesized Output	
(a)	/CaCaaC/	/kabaad/ 'livers'	=>	[ʔaCCaaC]	[ʔakbaad]
(b)	/CaCuC/	/naʒum/ 'stars'	=>	[ʔaCCuC]	[ʔanʒum]
(c)	/CaCiC/	/ʒanih-at/ 'wings'	=>	[ʔaCCiC]	[ʔaʒniḥ-at]

broken-plural formation. They observe that Arabic broken plurals are best analyzed as prosodic feet. The iambic pattern of the form CVCVV+ (with stress falling on the second syllable) is by far the most common; it is also the only productive pattern. The other major non-iambic pattern is the trochaic foot CVCVC (with stress falling on the first syllable) (see also Katamba 2001: 272–4).

Central to the present paper are three of the thirty-one templates: [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC]. Unlike the majority of the broken-plural templates, these templates fall into neither of the two aforementioned categories: the iambic template CVCVV+ or the trochaic template CVCVC. According to McCarthy and Prince (1990: 231), however, this irregularity is only phonological. Following Levy (1971), they provide a synchronic analysis of [ʔaCCaaC] as being an underlying iamb of the form /CaCaaC/. They extend the analysis to [ʔaCCuC] and [ʔaCCiC], holding that they are underlying trochees of the forms /CaCuC/ and /CaCiC/ respectively. They suggest that the stem-initial *Ca* metathesizes into *aC*, and a glottal stop ʔ is inserted as a repair for illegal onsetless syllables. Table 1 is an illustration.

The generalization is compelling, but the analysis is controversial for at least three reasons:

- **Reason 1:** The phenomenon is not phonologically motivated.
- **Reason 2:** The general phonological behavior of epenthesized glottal stops in SA differs from the behavior of the word-initial glottal stop found in the three templates under examination.
- **Reason 3:** An analysis of the three broken-plural templates as the outcome of synchronic metathesis entails that the learner must learn [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] as /CaCaaC/, /CaCuC/, and /CaCiC/, which is highly unlikely.

This article sets out to argue against synchronic *Ca* metathesis in the SA broken plural and presents an alternate diachronic analysis based on pseudometathesis. The following sections are organized as follows. Section 2 discusses the three aforementioned reasons. Section 3 provides the alternative analysis. It suggests that *Ca* metathesis should be redefined as a two-step diachronic process of pseudometathesis which took place prior to the documentation of the Arabic language in the 7th and 8th centuries (see Versteegh 1997). This process is divided into two phases: (i) vowel deletion and (ii) vowel epenthesis. Each phase is further divided into four stages of language change. Sections 4 and 5 try to prove the plausibility of phase one and phase two respectively. They provide evidence from present-day dialects, mainly Lebanese Arabic (LB) and Moroccan Arabic

Table 2. Metathesis vs. no metathesis: Analogous environments.

	Metathesis			No Metathesis		
	Singular	Plural	Gloss	Singular	Plural	Gloss
(a)	[ʕalam]	[ʔaʕlaam] /ʕalaam/	flag	(a')	[ʕilm]	[ʕuluum] science
(b)	[baħr]	[ʔabħaar] /baħaar/	sea	(b')	[baħr]	[biħaar] sea
(c)	[ʒihaaz]	[ʔaʒhiz-at] /ʒahiz-at/	device	(c')	[ʒuhd]	[ʒuhuud] effort
(d)	[ʒaaniħ]	[ʔaʒniħ-at] /ʒaniħ-at/	wing	(d')	[ʒamal]	[ʒimaal] camel
(e)	[ʕajn]	[ʔaʕjun] /ʕajun/	eye	(e')	[ʕajb]	[ʕujuub] defect
(f)	[riʒil]	[ʔarʒul] /raʒul/	leg	(f')	[raʒul]	[riʒaal] man

(MR), to show that the outcome of each of the stages within each phase is possible. Section 6 revisits the three arguments against *Ca* metathesis discussed in section 2 and shows that pseudometathesis is superior with respect to all of them. Section 7 discusses some remaining issues. Section 8 is a conclusion.²

2 Arguments against *Ca* metathesis

2.1 Phonologically unmotivated metathesis

The three templates [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] are assumed to exist as a result of *Ca* metathesis (Levy 1971, McCarthy and Prince 1990). Hume (2004) defines metathesis as ‘the process whereby in certain languages the expected linear ordering of sounds is reversed under certain conditions’ (203). Metathesis takes place in order to replace a cluster or a syllable structure that is considered (or has come to be considered) marked in a certain language with a cluster or a syllable structure that is unmarked. In other words, metathesis is normally phonologically driven. It occurs because output forms are phonotactically ‘better’ than input forms (McCarthy 1995, Hume 1997, 1998, Blevins and Garrett 1998: 508–9).

Observe Table 2 in the light of the above definition. The data demonstrate that the phonological motivation for metathesis is not available. They show that for every case of a metathesized plural form there is another plural form of analogous environment where no metathesis applies. Stated differently, although the same conditions that induce metathesis in (a–f) are available for (a’–f’), the latter words are not metathesized.

One might argue that the forms in (a) through (f) begin with *Ca*, while the forms in (a’) through (f’) begin with *Ca* or *Ca*. In other words, it might be the quality of the vowel itself that induces metathesis. This argument is refuted by two facts: (i) the high vowels *i* and *u* are normally more susceptible to deletion than the low vowel *a* (Brame 1973, 1974, Kenstowicz and Abdul-Karim 1980, and Owens 2006: 60–1, among others); and (ii) there is at least one plural template /CaCaCa/ that begins with *Ca* but does not undergo metathesis. As Table 3 shows, /CaCaC-at/ has to be realized as [CaCaC-at]. Metathesis results in an unacceptable output: *[ʔaCCaC-at].

Table 3. [CaCaC-at] vs. *[ʔaCCaC-at].

	Singular	Plural [CaCaC-at]	Plural *[ʔaCCaC-at]	Gloss
(a)	[t ^ʕ aalib]	[t ^ʕ alab-at]	*[ʔat ^ʕ lab-at]	student
(b)	[xaadim]	[xadam-at]	*[ʔaxdam-at]	servant

Based on this discussion, it can be fairly concluded that the phenomenon, if it exists at all, is not phonologically driven and thus cannot be explained by attributing it to metathesis.

2.2 The phonological behavior of epenthesized ʔ

An epenthesized glottal stop in SA is used as a repair tool to avoid illegal onsets. A SA syllable is considered illegal if it is onsetless or if it begins with a consonant cluster. To illustrate, consider the case of imperative verbs in SA. If an imperative verb begins with a consonant cluster, such as /ʃrab/ ‘drink (imperative)’ and /drus/ ‘study (imperative)’, the complex onset is repaired via ʔV epenthesis. Thus, /ʃrab/ is realized as [ʔiʃrab] and /drus/ as [ʔudrus].

The glottal stop and the vowel are each independently inserted as last-resort repair strategies. In other words, ʔ epenthesis does not take place if the verb is preceded by a word that ends with a consonant. For example, /qum drus/ ‘go study’ (literally, ‘rise study’) is realized as [qu.mud.rus]. The final consonant in the former word repairs the onsetless syllable in the latter. If the verb is preceded by a word that ends with a vowel, no vowel insertion takes place either. Thus, /hajja drus/ ‘come on study’ surfaces faithfully as [haj.jad.rus]. This shows that an epenthetic glottal stop is nothing more than a last-resort repair strategy (see Wiltshire 1998).

In the three Arabic plural patterns [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC], however, the initial glottal stop is not epenthetic. If it were, one would expect a SA broken-plural form like [ʔanzum] ‘stars’ to be realized as *[anzum] when the word is preceded by a consonant; e.g. *[ʔal-anzum] ‘the-stars’. Contrary to expectations, however, [ʔal-ʔanzum] is the optimal output.³

2.3 Ca metathesis and learnability

An analysis based on synchronic Ca Metathesis suggests that in the mind of the SA learner the repertoire of broken-plural templates contains /CaCaaC/, /CaCuC/, and /CaCiC/ and that [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] are nothing but output forms. This implication is improbable.

Before explaining why this is so, a comment about the SA learner is in order. Given that there has been no such thing as a native speaker of SA since as early as the tenth century (Versteegh 1997: 64), it is not possible to talk about first language acquisition of SA. This said, it is important to note that the average Arab today – or

the average native speaker of an Arabic dialect who is a permanent resident of an Arab country – does receive a fair amount of input from SA in two main ways: (i) formal education and (ii) media. An educated Arab normally starts learning SA at school around the age of five or six. In addition, exposure to SA through television and other forms of media, not to mention exposure to the more eloquent Koran recitations among Muslim Arabs, starts at around the same age or even earlier.⁴

Concerning formal education, one of the early lessons of prescriptive grammar that SA students learn is the difference between two types of glottal stops: (i) a weak, epenthetic ʔ, presented in Arabic orthography as ʔ or simply ʔ, and (ii) a strong, non-epenthetic ʔ, presented in Arabic orthography as ʔ (see Ryding 2005: 16–20). As we saw in the previous subsection, the weak ʔ is only pronounced in an utterance-initial position in order to repair an illegal complex onset, and it is accompanied by *a*. The strong ʔ, on the other hand, is considered part of the word and is pronounced all the time. For example, ʔ in [ʔamal] ‘hope’ belongs to this category. Similarly, the glottal stop in the three SA broken-plural templates under examination is a strong ʔ, and SA students are aware of this.

With regard to informal exposure via the media, [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] are the only forms that the learner hears; under no circumstances is any of these forms realized in its unmetathesized form as [CaCaaC], [CaCuC], or [CaCiC]. As Kager (1999) states, ‘if no alternations occur in a morpheme’s shape, the learner will never postulate an input deviating from the actual observable output form. Due to *Lexicon Optimization*, the input simply equals the output unless there is reason to deviate’ (414). Therefore, the learner will never postulate /CaCaaC/, /CaCuC/, and /CaCiC/ as the underlying forms of [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC]. Rather, she or he ‘adopts, as the underlying form, precisely the surface analysis of the overt form that has been heard’ (Prince and Tesar 1999: 8). That is, the idea that the SA learner has /CaCaaC/, /CaCuC/, and /CaCiC/ as underlying forms, as the synchronic approach implies, is implausible.

One conclusion we can draw from the three arguments presented in this section is that the three forms [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] must be synchronically analyzed as underlyingly /ʔaCCaaC/, /ʔaCCuC/, and /ʔaCCiC/. Such an analysis is superior because it considers the surface forms as faithful realizations of the underlying forms. Therefore, it does not have to deal with issues like (i) the trigger for phonological alternation in the output, (ii) weak vs. strong ʔ, and (iii) learnability.

As I mentioned in the introduction, however, the analysis put forth by McCarthy and Prince (1990) is compelling in that it achieves pattern congruity. In the following section, I show that although the three forms [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] must be synchronically analyzed as having the underlying representations /ʔaCCaaC/, /ʔaCCuC/, and /ʔaCCiC/, they can nevertheless be plausibly seen as having arisen historically from the representations /CaCaaC/, /CaCuC/, and /CaCiC/—not by means of a synchronic process of Ca metathesis (as in McCarthy and Prince’s analysis) but as the result of a diachronic process of pseudometathesis. In Sections 4 and 5, I support this view by presenting evidence from contemporary Arabic dialects.

Table 4. Metathesis in Naḏdi Arabic.

	Unmetathesized Input	Metathesized Output	Gloss
(a)	/maḥbuus/	mḥabuus	imprisoned
(b)	/naḥḏ-at/	nḥaḏ-at	ewe

Table 5. Pseudometathesis in Naḏdi Arabic.

		Epenthesis	Deletion	Gloss
(a)	/maḥbuus/	maḥabuus	mḥabuus	imprisoned
(b)	/naḥḏ-at/	naḥaḏ-at	nḥaḏ-at	ewe

Table 6. Epenthesis in Negev Bedouin Arabic.

		Epenthesis	Gloss
(a)	/maḥḏuub/	[maḥaḏuub]	veiled
(b)	/maḥguul/	[maḥaguul]	reasonable

3 Pseudometathesis in the SA broken plural

Blevins and Garrett (1998: 540) define pseudometathesis as a process of ‘vowel epenthesis followed historically by vowel deletion, or vice versa’. The outcome mimics that of CV metathesis, hence the term pseudometathesis. Whereas CV metathesis is synchronic in nature, pseudometathesis is diachronic.

Before proceeding, it is worth mentioning that pseudometathesis is not uncommon in Arabic. To illustrate, Table 4 presents data from Naḏdi Arabic (from Abboud 1971, in Blevins and Garrett 1998: 523). It shows that in this dialect the sequence aC_1C_2 is realized as C_1aC_2 if C_1 is a guttural continuant. Blevins and Garrett (1998: 523, 540), however, hold that what appears like a Ca metathesis is more likely to be pseudometathesis. More specifically, they suggest that the Naḏdi words undergo a diachronic process of epenthesis followed by deletion, presented in Table 5.⁵

Evidence that pseudometathesis is a possible analysis comes from the Negev Bedouin Arabic. This latter dialect still allows epenthesis after a guttural continuant, as the data in Table 6 illustrate (from Blanc 1970, in Blevins and Garrett 1998: 523). Blevins and Garrett suggest that Naḏdi Arabic was historically similar to Negev Bedouin Arabic. At a later stage, the original vowel underwent deletion, and the epenthesized vowel survived. Given that the high vowels i or u – rather than the low vowel a – normally undergo deletion, Blevins and Garrett further maintain that vowel deletion was probably preceded by an open-syllable a reduction (or a -to- i change), which is not uncommon in modern Arabic dialects, including Naḏdi Arabic.

Following Blevins and Garrett, I suggest that the three broken-plural templates [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] are the result of pseudometathesis. Unlike the aforementioned case of Naḏdi Arabic, however, in the case of the SA broken plural, vowel deletion preceded vowel epenthesis. Vowel deletion is, thus, phase one and vowel

Table 7. Pseudometathesis in the SA broken plural.

	Phase One Vowel Deletion		Phase Two Vowel Epenthesis
(a)	CaCaaC	CCaaC	?aCCaaC
(b)	CaCuC	CCuC	?aCCuC
(c)	CaCiC	CCiC	?aCCiC

Table 8. Pseudometathesis in the SA broken plural: Phase One.

	Input	Stage One Faithful Output	Stage Two <i>a</i> Reduction	Stage Three Syncope	Stage Four Phonologization
(a)	/CaCaaC/	[CaCaaC]	[CiCaaC]	[CCaaC]	/CCaaC/
(b)	/CaCuC/	[CaCuC]	[CiCuC]	[CCuC]	/CCuC/
(c)	/CaCiC/	[CaCiC]	[CiCiC]	[CCiC]	/CCiC/

epenthesis phase two. The latter was accompanied by ? epenthesis as a repair strategy against onsetlessness, as Table 7 illustrates.⁶

To elaborate, I suggest that phase one proceeded as follows. At some point prior to the documentation of SA grammar, which started at the end of the seventh century (see Versteegh 1997, Holes 1994), the three SA broken-plural templates /CaCaaC/, /CaCuC/, and /CaCiC/ were realized faithfully as [CaCaaC], [CaCuC], and [CaCiC] respectively. This did not last, however. As a result of language change, they underwent syncope – or short-vowel deletion in open, unstressed syllables – which was common in the speech of Arabic language users (Owens 2006: 59–61). That is, the first vowel in /CaCaaC/, /CaCuC/, and /CaCiC/ underwent syncope, and the three templates were realized as [CCaaC], [CCuC], and [CCiC] respectively.

Nevertheless, as I mentioned earlier, it is uncommon for the low vowel *a* to undergo syncope. Normally, the high vowels *i* and *u* are the ones that are more susceptible to deletion (Owens 2006: 60). This is why I suggest that syncope was preceded by an open-syllable *a* reduction. That is, the three templates were realized as [CiCaaC], [CiCuC], and [CiCiC] (or [CuCaaC], [CuCuC], and [CuCiC]) before syncope took place.

Gradually, the shortened forms [CCaaC], [CCuC], and [CCiC] underwent phonologization in the sense of Hyman (1977) (see also Ohala 1993). In other words, the phonetic variations in [CCaaC], [CCuC], and [CCiC] were interpreted as phonological; native speakers internalized the forms synchronically as the underlying forms /CCaaC/, /CCuC/, and /CCiC/ and realized them faithfully as [CCaaC], [CCuC], and [CCiC] respectively. Phase one is summarized in Table 8.

Phase two started at a later stage. This is when the faithful outputs of /CCaaC/, /CCuC/, and /CCiC/ started being treated by language users as templates with illegal complex onsets. As a repair strategy, speakers resorted to word-initial vowel epenthesis – also known as prothesis – accompanied by ? epenthesis to repair onsetlessness. As a result, the now underlying forms /CCaaC/, /CCuC/, and /CCiC/ were realized as [?aCCaaC], [?aCCuC], and [?aCCiC], respectively.

Table 9. Pseudometathesis in the SA broken plural: Phase Two.

Input	Stage One ʔV epenthesis	Stage Two Phonologization	Stage Three <i>a</i> lowering	Stage Four Phonologization
(a) /CCaaC/	[ʔiCCaaC]	/ʔiCCaaC/	[ʔaCCaaC]	/ʔaCCaaC/
(b) /CCuC/	[ʔiCCuC]	/ʔiCCuC/	[ʔaCCuC]	/ʔaCCuC/
(c) /CCiC/	[ʔiCCiC]	/ʔiCCiC/	[ʔaCCiC]	/ʔaCCiC/

It is unlikely, however, that the inserted vowel was *a*. Although *a* epenthesis is not uncommon in Arabic, *i* or *u* epenthesis is far more common (Owens 2006: 107–9). Therefore, it is possible that /CCaaC/, /CCuC/, and /CCiC/ were first realized as [ʔiCCaaC], [ʔiCCuC], and [ʔiCCiC] (or [ʔuCCaaC], [ʔuCCuC], and [ʔuCCiC]). Subsequently, the three phonetic forms gained a phonological status. In other words ʔ*i* was now considered part of the underlying form rather than epenthetic. This led to high-vowel (*i* or *u*) lowering in the environment of the guttural ʔ (McCarthy 1991). As a result, /ʔiCCaaC/, /ʔiCCuC/, and /ʔiCCiC/ surfaced as [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] before they were themselves phonologized as /ʔaCCaaC/, /ʔaCCuC/, and /ʔaCCiC/. Phase two is summarized in Table 9.

In this section, I suggested that the three SA broken-plural templates have the forms they have today due to a diachronic process of pseudometathesis. This process is made up of two phases: (i) vowel deletion and (ii) vowel epenthesis. Both phases, I assume, took place prior to the documentation of the Arabic language which, as Versteegh (1984: 10, 1997) holds, did not take effect until the end of the 7th century, less than a century into the Islamic era.

In the following section, I provide evidence to show that pseudometathesis is a plausible alternative. In an ideal world, evidence should come from pre-Islamic or early Islamic Arabic. As Owens (2006: 75, fn. 41) observes, however, ‘there is, strictly speaking, no written literary oeuvre attested from the pre-Islamic period itself, only interpretation of the oral literature which . . . derives largely from the ninth century’. Given this state of affairs, the only way to support the claims made in this section is by providing evidence that the stages delineated in each phase are manifest in present-day dialects. This attempt is based on a non-trivial assumption. Following Versteegh (1984, 2004), Holes (1994), and Owens (2006), I assume that all modern dialects descend from a common ancestry: pre-Islamic Arabic (see Ferguson 1959 for a counterargument). If the stages that are claimed to constitute pseudometathesis are manifest in the modern dialects, they might have taken place in the dialects of pre-Islamic or early Islamic Arabic as well.

4 Phase One

The previous section claims that phase one of pseudometathesis is made of four stages: (i) faithful output, (ii) *a* reduction, (iii) syncope, and (iv) phonologization. The main purpose of this section is to provide evidence, mostly from present-day dialects, in order to show that these stages are plausible.

Table 10. [CaCaaC], [CaCuC], and [CaCiC] as possible outputs in SA.

	[CaCaaC]	[CaCuC]	[CaCiC]
(a)	[kamaal] ‘perfection	[kabur-a] ‘to grow’	[samiʕ-a] ‘to hear’
(b)	[ʒamaal] ‘beauty’	[xaʃun-a] ‘roughen’	[fahim-a] ‘to understand’
(c)	[salaam] ‘peace’	[hasun-a] ‘become good’	[malik] ‘king’

Table 11. *a* deletion in LB.

	Singular	SA plural	LB plural	Gloss
(a)	[xizaan-at]	[xazaaʔin]	[xazeejin]/[xzeejin]	closet
(b)	[qinniin-at]	[qanaanii]	[ʔaneeni]/[ʔneeni]	bottle
(c)	[miqbar-at]	[maqaabir]	[maʔaabir]/[mʔaabir]	cemetery
(d)	[maʒnuun]	[maʒaaniin]	[maʒaniin]/[mʒeniin]	crazy person
(e)	[tilmiið]	[talaamiið]	[talamiiz]/[tlemiiz]	student

4.1 Faithful Output

Evidence that the three plural templates examined in this paper could have been realized faithfully as [CaCaaC], [CaCuC], and [CaCiC] comes from the fact that the templates themselves are not totally banned as possible outputs in SA. As Table 10 illustrates, [CaCaaC] is manifest in nouns, while the other two templates are mainly realized as Stem I verbs.

4.2 *a* Reduction

The speculation that the first vowel in the three SA broken-plural templates underwent *a* reduction prior to syncope is based on two assumptions:

- (i) High vowels are normally the victims of syncope.
- (ii) Prior to syncope, the first vowel in the plural templates was *a*.

With regard to (i), although the assumption is true as a general observation, there is independent evidence that *a* deletion in Arabic is not uncommon. As Kenstowicz and Abdul-Karim (1980) point out, Levantine dialects – including LB – do not restrict syncope to high vowels; *a* also undergoes syncope. They observe that the victim of such syncope is usually the second syllable of verb stems that take on 3rd person singular feminine agreement. For instance, /katab-et/ ‘she wrote’ may surface as [katb-et] (from Cowell 1964).

Syncope may also target the first syllable, however. Observe Table 11. The data shows that *a* may also be the victim of deletion. The second form in the LB plural column is rarely used in the Beirut area. It is used by LB speakers from other more rural regions (e.g. Ftuuḥ Kisirween).

Concerning (ii) and the idea that the deleted vowel is *a*, once metathesis is ruled out, the assumption becomes vacuous. Here is why. Metathesis changes the order of phonemes in a word while keeping their quality – or distinctive features – intact. This

Table 12. Quality of first vowel in Nigerian Arabic [CVCiC] and [CVCuC].

	Singular	SA Plural	Nigerian Arabic Plural	Gloss
(a)	[ħimaar]	[ʔaħmir-at]	[ħimir-re]/[ħumur-re]	donkey
(b)	[lisaan]	[ʔalsin-at]/[ʔalsun]	[lisin-ne]/[lusun-ne]	tongue

means that if the *a*C in the first syllable in [ʔaCCaaC] is the result of CV metathesis, then the first vowel in the unmetathesized forms is necessarily *a*; thus, /CaCaaC/.

Pseudometathesis, on the other hand, is vowel deletion followed by vowel insertion (or vice versa). Nothing in the definition entails that the inserted vowel has to be identical to the deleted vowel. In other words, it is probable that the first vowel in the three SA broken-plural templates was *i* or *u* rather than *a* prior to syncope. In this sense, the original templates would be /CiCaaC/, /CiCuC/, and /CiCiC/ (or /CuCaaC/, /CuCuC/, and /CuCiC/).

Evidence that this view is possible comes from Nigerian Arabic. Observe the data in Table 12. Unlike SA, Nigerian Arabic still realizes the plural forms of ‘donkey’ and ‘tongue’ with the original templates. Note that the first vowel is the high vowel *i* or *u* rather than the low vowel *a*. (The Nigerian Arabic data is from Owens 2006: 53–5.)

The discussion thus far indicates that *a* reduction might be an unnecessary stage in phase one. Whereas this might be true, it is important to note that another scenario is also viable. Kenstowicz and Abdul-Karim (1980) point out that *a* syncope in LB is more likely to be preceded by *a* reduction. Evidence for such reduction comes from the Tripoli dialect of LB. In this dialect, *a* reduction targets the first vowel of nouns that have the underlying form /CaCCaaC/. For example, /xabbaaz/ ‘baker’ is realized as [xibbaaz]. No further syncope takes place in [xibbaaz] because the result will be an illegal onset of the form CCC.

The same observation may be extended to Nigerian Arabic. In other words, it might be argued that the vowels in the Nigerian Arabic plural forms [ħimir-re]/[ħumur-re] ‘donkeys’ and [lisin-ne]/[lusun-ne] ‘tongues’ have undergone *a* reduction. Given that this is a possibility, let us continue to assume that *a* reduction took place prior to syncope. The question is: Do present-day dialects allow such a process? If yes, then it is possible that something similar happened to the three SA broken-plural templates under investigation.

Fortunately, *a* reduction is common in present-day dialects. Two such dialects are Nazdi Arabic and LB. Table 13 shows that *a* reduction in Nazdi Arabic targets open syllables (e.g. (a)), but not closed syllables (e.g. (b–c)) (Blevins and Garrett 1998: 523). In LB, *a* reduction is less restricted. (The Nazdi Arabic data is from Abboud 1979 in Blevins and Garrett 1998: 523.)

Interestingly, *a* reduction is common, not only in present-day dialects, but also in pre-Islamic Arabic. To illustrate, Owens (2006: 70) observes that the performative vowel of the imperfect verb *a* may also be realized as *i*. For example, /t-a-ktub/ ‘you write’ has two variants: [t-a-ktub] and [t-i-ktub].

Table 13. *a* reduction in Naḡdi Arabic and LB.

	SA	Naḡdi Arabic	LB	Gloss
(a)	[ʃariba]	[ʃirib]	[ʃirib]	he drank
(b)	[ʃaribat]	[ʃarbat]	[ʃirbit]	she drank
(c)	[ʃaribuu]	[ʃarbaw]	[ʃirbo]	they drank

Table 14. SA [ʔaCCaaC] vs. LB [CCaaC].

	Singular	SA plural	LB plural	Gloss
(a)	[θawb]	[ʔaθwaab]	[tweeb]	dress/gown
(b)	[θawr]	[ʔaθwaar]	[twaar]	ox
(c)	[kitf]	[ʔaktaaf]	[kteef]	shoulder
(d)	[kiis]	[ʔakjaas]	[kjees]	bag
(e)	[walad]	[ʔawlaad]	[wleed]	child

Table 15. Syncope in the LB broken plural.

	Singular	SA plural	LB plural	Gloss
(a)	[raʒul]	[riʒaal]	[rʒeel]	man
(b)	[ʒabal]	[ʒibaal]	[ʒbeel]	mountain
(c)	[kalb]	[kilaab]	[kleeb]	dog
(d)	[ʃak]	[ʃukuuk]	[ʃkuuk]	doubt
(e)	[malik]	[muluuk]	[mluuk]	king
(f)	[ʕajb]	[ʕujuub]	[ʕjuub]	defects

4.3 Syncope

We have already seen examples of syncope in rural LB in Table 11. Syncope is also seen in the data in Table 13. The purpose of this section is more focused, however. It presents evidence that the three broken-plural outputs [CCaaC], [CCuC], and [CCiC] that result from syncope in phase one, although not possible in SA, are available in present-day Arabic dialects. Stated differently, this section shows that certain modern dialects mimic stage three of phase one of pseudometathesis. At least two dialects are helpful in this respect: LB and MR.

In LB, the SA broken-plural template [ʔaCCaaC] is realized as [CCaaC], as the examples in Table 14 show.

In LB, syncope of this type is not limited to the so-called metathesized SA template [ʔaCCaaC]. Other SA broken-plural templates have undergone syncope as well, as the data in Table 15 show. Notice that the deleted vowel in all the examples is *i* or *u*, which supports the speculation that *a* reduction took place before syncope.⁷

Now we turn to the two remaining templates: [ʔaCCiC] and [ʔaCCuC]. What is needed is evidence that these templates are realized in at least one dialect as [CCiC] and [CCuC] respectively. LB is not helpful in this respect because this dialect does not

Table 16. MR word shortening of SA metathesized plural templates.

	Singular	SA plural	Moroccan plural	Gloss
(a)	[ʕaamud]	[ʔaʕmud]	[ʕmed]	column
(b)	[bajt]	[ʔabjut]	[bjut]	house
(c)	[ħimaar]	[ʔahmir-at]	[ħmir]	donkey

Table 17. MR vs. SA elative adjectives.

	SA elative	Moroccan elative	Gloss
(a)	[ʔaθqal]	[tqel]	heavy
(b)	[ʔakbar]	[kber]	big
(c)	[ʔabrad]	[bred]	cold

Table 18. MR vs. SA adjectives of color and defects.

	SA	Moroccan	Gloss
(a)	[ʔas ^s far]	[s ^s fer]	yellow
(b)	[ʔaxd ^s ar]	[xd ^s er]	green
(c)	[ʔabjad ^s]	[bjad ^s]	white
(d)	[ʔabkam]	[bkem]	mute
(e)	[ʔahwal]	[ħwel]	cross-eyed
(f)	[ʔaʕma]	[ʕma]	blind

allow monosyllabic outputs with a complex onset and a short vowel. In other words, words of the form [CCVC] are banned. MR, on the other hand, does allow words of the form [CCVC] as the examples in Table 16 show (from Harrell 2004: 86–7).

Based on the above examples, we can conclude that stage two of phase one, although hypothetical, is not completely bizarre.

A short digression is in order. The three broken-plural templates under examination are not the only SA forms that are claimed to have undergone metathesis. As Levy (1971: 315) originally observed, other forms that undergo metathesis include Stem IV verbs (e.g. [ʔaʕlan-a] ‘announce’); the so-called ‘verbs of surprise’ (e.g. [ʔakðab] ‘liar’ in [maa ʔakðab-a-hu] ‘how untruthful (he is)’);⁸ elative adjectives (e.g. [ʔat^swal] ‘taller/tallest’); and adjectives of colors and defect (e.g. [ʔahmar] ‘red’ and [ʔat^rra] ‘deaf’). All of these forms are realized as [ʔaCCaC] in SA; yet, they are believed to be underlyingly /CaCaC/. If the analysis proposed in this paper is on the right track, then the output [ʔaCCaC] would be the result of pseudometathesis, a diachronic process of vowel deletion followed by vowel epenthesis.

For the purpose of being thorough, I show that the above discussion about the broken-plural templates applies directly to these new forms. The MR data in Tables 17 and 18 show that elative adjectives and adjectives of color and defect may be realized without the initial ʔa (from Harrell 2004).⁹

Given that [ʔaCCaC] is realized as [CCaC] in a modern dialect, it could also have been realized the same in pre-eight century Arabic. In other words, [CCaC] was at some point underlyingly /CaCaC/ realized faithfully as [CaCaC]. At a later stage, the first vowel underwent *a* reduction and then syncope. Phase two and ʔV epenthesis follow. The result is the present form: [ʔaCCaC]. Phase two was preceded by phonologization, however, which is the topic of the next section.

4.4 Phonologization

Stage four of phase one is phonologization. The claim is that prior to phase two and vowel epenthesis, the three forms [CCaaC], [CCiC], and [CCuC] were internalized by language users as /CCaaC/, /CCiC/, and /CCuC/.

Evidence that this might have happened comes again from LB and MR. To elaborate, the LB broken-plural forms in Table 14 ([tweeb] ‘gowns’, [twaar] ‘oxen’, [kteef] ‘shoulders’, etc.) are faithful realizations of their underlying forms (/tweeb/, /twaar/, /kteef/, etc.). To the native speakers of LB, the broken-plural template [CCeeC] is the one they have always heard and used in their dialect. Therefore, the native speakers postulate this surface form as the underlying form (see Kager 1999 and Prince and Tesar 1999).

The same observation may be extended to MR. The broken-plural data in Table 16, as well as in Tables 17 and 18, are presented in Harrell (2004) as the only possible forms in the dialect. Assuming that they are, there is no reason to postulate an underlying form that is different from the surface representation.

This section showed that there are dialects that have [CCaaC], [CCiC], and/or [CCuC] as underlyingly /CCaaC/, /CCiC/, and/or /CCuC/. Therefore, we can conclude that stage four in phase one is a reasonable speculation. Now we turn to phase two.

5 Phase Two

In Section 4, I suggested that phase two of pseudometathesis must have started when the complex onset in the output of /CCaaC/, /CCuC/, and /CCiC/ came to be considered as a violation. This is when native speakers of Arabic resorted to the repair strategy they knew best, namely, prothesis, followed by ʔ epenthesis to repair onsetlessness. Given that Arabic usually epenthesizes *i* or *u*, it is fair to assume that prothesis was itself characterized by high-vowel insertion. The outcome was the surface forms [ʔiCCaaC], [ʔiCCuC], and [ʔiCCiC] (or [ʔuCCaaC], [ʔuCCuC], and [ʔuCCiC]).

A second wave of phonologization was initiated, and the inserted segments started being treated as part of the templates. This is when the high vowel in the first syllable underwent lowering into *a* in the environment of the guttural segment ʔ (McCarthy 1991). A third and final wave of phonologization followed, and the three templates became underlyingly /ʔaCCaaC/, /ʔaCCuC/, and /ʔaCCiC/.

Table 19. Hijazi syncope.

	Hijazi Arabic	Gloss
(a)	[tuk.tub]	you write.MASCULINE
(b)	[tukt.b-iin]	you write-FEMININE

Table 20. LB syncope + epenthesis.

	LB	Gloss
(a)	[tik.tub]	you write.MASCULINE
(b)	[tikit.b-c]	you write-FEMININE

Admittedly, the analysis is built on speculations. Nevertheless, the speculative nature of the analysis may be mitigated if the answers to the following two questions are positive:

- (i) Is it possible for language change to produce a form that is later considered illegal?
- (ii) Is it possible for epenthetic material, which is only used to repair output, to become part of the input?

The following subsections show that positive answers are available.

5.1 Language change reversed

At first blush, the claim that language change may result in a form that is later treated as a phonotactic violation sounds strange. Closer examination, however, shows that it is not impossible. Cases similar to pseudometathesis, whereby vowel deletion results in an illegal structure that is subsequently repaired via epenthesis, are attested in Arabic synchronically.

Consider the examples from Hijazi Arabic in Table 19 (from T. Prochazka 1988 in Owens 2006: 191). In this dialect, the short vowel *u* is maintained in closed syllables (e.g. Table 19a), but it is deleted in open unstressed syllables (e.g. Table 19b).

Now, consider the same example in LB. Apparently, LB has the same rule of syncope as Hijazi Arabic. Unlike Hijazi Arabic, however, LB does not allow a complex coda. This is why syncope is followed by vowel epenthesis, as Table 20b illustrates (see Kiparsky 2003). Note that the deleted vowel and its epenthesized counterpart are not the same. In other words, this is not a case of metathesis.

Synchronically, LB shows that it is possible for a language to produce an illegal syllable structure as the result of one rule, only to repair it via another rule. In Optimality Theory (Prince and Smolensky 1993), this phenomenon is translated in terms of constraints and their ranking. Apparently, in LB having a high vowel in an unstressed open syllable is a more serious violation than vowel deletion and vowel epenthesis.

Let us assume that Hijazi Arabic and LB represent two phases of language change. Hijazi Arabic represents phase one, and LB represents phase two. In phase one, syncope

takes place, resulting in a complex coda (e.g. Table 19b). In phase two, the complex coda is considered a violation and, accordingly, it is repaired via vowel epenthesis (e.g. Table 20b). If this hypothetical situation is on the right track, then the diachronic analysis of the three SA broken-plural templates as instances of pseudometathesis is possible.¹⁰

5.2 Phonologization of epenthetic ?V

The idea that epenthetic ?V became part of the underlying form is also attested in Arabic. Kaye (1991) presents evidence for a similar case of language change manifested in modern SA. Originally, the SA word [ʔism] ‘name/noun’ is underlyingly /sm/ with ?i being inserted as needed. For example, when used in citation or sentence-initially, /sm/ surfaces as [ʔism]. When preceded with a consonant, however, /sm/ surfaces as [ism]; e.g. [ʒamilun ism-u-ka] ‘your name is pretty’. When preceded with a vowel, it surfaces as [sm]; e.g. [maa sm-u-ka] ‘what is your name?’.

In present-day SA, the bi-consonantal root /sm/ has acquired a tri-consonantal status and emerged as underlyingly /ʔsm/. In other words, ? no longer behaves like an epenthetic glottal stop; rather, it behaves as part of the stem. To illustrate, the SA question [maa sm-u-ka] ‘what is your name?’ is now realized as [maa ʔism-u-ka] in written material and formal lectures. It is likely that this kind of change started in the Arabic dialects before influencing SA. For example, the way to ask someone about their name in LB is [ʃuu ʔism-ak]. Obviously, the intervocalic ? is not epenthetic.

6 Arguments against *Ca* metathesis revisited

In section 2, I presented three arguments against *Ca* metathesis in the SA broken plural. In sections 3 through 5, I suggested that the phenomenon is actually pseudometathesis comprising two phases of vowel deletion and vowel epenthesis. Each phase is further divided into four stages of language change. Now the task is to show that pseudometathesis is a solution to the three arguments against metathesis.

Concerning the first argument that metathesis is not phonologically motivated, pseudometathesis is in itself a solution. Metathesis is a one-step synchronic process whereby the linear ordering of sounds is reversed for phonological reasons. These reasons are not available in the SA broken plural. Pseudometathesis shows that the seeming reversal actually constitutes two diachronic phases (eight stages), each of which is independently motivated, albeit selective.

The second argument against metathesis holds that if the glottal stop in the broken-plural templates [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] is epenthesized, then it should be deleted phrase-internally just like any other epenthesized glottal stop, but it isn’t. This paper still considers the glottal stop epenthesized, with a major difference however. Metathesis implies that ? epenthesis in the SA broken plural is a synchronic phenomenon like any other ? epenthesis that takes place in the language. Pseudometathesis, on the other hand, suggests that ?V epenthesis is only a stage in an eight-stage diachronic process. After epenthesis took place, the pseudometathesized forms were phonologized and became templates in their own right.

Finally, *Ca* metathesis implies that the three broken-plural templates under examination are stored in the mind of the learner in their unmetathesized forms. This is highly unlikely simply because the SA learner never hears the unmetathesized forms. The diachronic analysis offered in this paper, however, does not make such an implication. On the contrary, pseudometathesis is itself an explanation why it is impossible for the learner to postulate /CaCaaC/, /CaCuC/, and /CaCiC/ as the underlying forms of [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC]. The eight stages that constitute pseudometathesis and historically separate /CaCaaC/, /CaCuC/, and /CaCiC/ from [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] make it virtually impossible to bridge the two sets.

As I mentioned at the end of section 2, the three arguments against *Ca* metathesis indicate that analyzing the three forms [ʔaCCaaC], [ʔaCCuC], and [ʔaCCiC] as underlyingly /ʔaCCaaC/, /ʔaCCuC/, and /ʔaCCiC/ is superior to analyzing them as underlyingly /CaCaaC/, /CaCuC/, and /CaCiC/. At the same time, the pattern congruity attained by McCarthy and Prince is theoretically elegant and probably true. The virtue of pseudometathesis lies in its ability to bring together what seems to be two contradictory views. It suggests that the three broken-plural templates in question were at some point /CaCaaC/, /CaCuC/, and /CaCiC/, and thus they fell in place with the rest of the templates. Assuming this is correct, pseudometathesis goes on to show that the historic forms /CaCaaC/, /CaCuC/, and /CaCiC/ are now /ʔaCCaaC/, /ʔaCCuC/, and /ʔaCCiC/, which explains the behavior of their surface forms in present-day SA.

If the analysis is correct, this means that there should be at least two lists of broken-plural templates: a pre-seventh century list that contains the templates /CaCaaC/, /CaCuC/, and /CaCiC/ and (ii) a post-seventh century list that contains the templates /ʔaCCaaC/, /ʔaCCuC/, and /ʔaCCiC/. The two sets are diachronically related, yet synchronically they belong to two different worlds.

7 Remaining issues

7.1 Templates that did not undergo pseudometathesis

It is obvious from the discussion in the previous sections that not all SA broken-plural templates underwent pseudometathesis. Out of the 31 templates, only three did. The remaining 28 templates may be divided into two categories: (i) those that did not undergo pseudometathesis for phonological reasons, and (ii) those that did not undergo pseudometathesis for no clear reason!

Concerning the former category, it may be further divided into two subcategories: (i) di-syllabic templates and (iii) tri-syllabic templates. The former comprises templates of the form [CVC.CV(V)C]; e.g. [fur.saan] ‘knights’ and [bul.daan] ‘countries’. In this case, the first vowel occupies a closed syllable. Syncope usually applies to vowels in open syllables. Further, if syncope applies, the result will be [CCCV(V)C]. To my knowledge, tri-consonantal complex onsets are illegal in all Arabic dialects. This paper assumes that

syncope is the precursor to ?V epenthesis in the process of pseudometathesis. If syncope does not take place, epenthesis does not happen, and neither does pseudometathesis.

Concerning tri-syllabic templates, these have the form [CV.CVVCV(V)C]; e.g. [ma.qaa.bir] ‘cemetery’ and [ta.maa.siiħ] ‘crocodiles’. In principle, the first vowel in these nouns may undergo syncope without resulting in unacceptable outcomes. Evidence comes from LB in which [maqaabir] and [tamaasiiħ] may be realized as [mʔaabir] and [tmeesiiħ] respectively (see Table 11). Yet, no ?V epenthesis occurs and thus no pseudometathesis takes place. In other words, plural words like *[ʔamqaabir] and *[ʔatmaasiiħ] are unacceptable. I argue that these templates do not undergo pseudometathesis due to a restriction on the number of feet that the broken-plural prosodic word may comprise. The Arabic broken-plural templates may not exceed two feet. In other words, the templates are subject to a constraint called the MAXIMAL STEM CONSTRAINT which states that templates can maximally be made up of two feet.¹¹

McCarthy and Prince (1988,1990) hold that the foot can be disyllabic or bimoraic. They add that CV.CVVC is an entire disyllabic iambic foot whereas ‘CVV.CVC is a bimoraic trochaic foot plus something more: [_FCVV]CVC’. If this is correct, then we may conclude that a word like *[ʔatmaasiiħ] ‘crocodiles’ cannot be lexicalized since it is made of two bimoraic trochaic feet plus an extra syllable [[_Fʔat]+[_Fmaa]+siiħ], thus violating the Maximal Stem Constraint.

Still, one point needs to be explained: If vowel shortening actually happened and a word like /maqaabir/ ‘cemetery’ was at some point realized as [mqaabir], as the LB data show, how did SA retain [maqaabir]? The assumption is that, since *[ʔamqaabir] induced a violation of the Maximal Stem Constraint, [mqaabir] was repaired by vowel re-insertion, leading to [maqaabir] again. Note that this is more typical of Beirut (the capital) due to the influence of SA. In rural areas, [mʔaabir] and [tmeesiiħ] are the unmarked situation.

We are left with the templates which could have undergone pseudometathesis but didn’t. These have the form [CVCV(V)C]; e.g. [kilaab] ‘dogs’. Present-day dialects (e.g. LB and MR) show that syncope is possible with these templates (e.g., SA [kilaab] is [kleeb] in LB; see Table 15). This means that pseudometathesis should also have been possible. I do not have a clear explanation regarding why these templates did not undergo pseudometathesis. The only explanation is that language change is selective, and that of all the plural templates that could possibly undergo pseudometathesis, only three were the victims of this diachronic process. Note, however, that some of these templates do surface as pseudometathesized forms in some dialects. For example, the SA plural form [kilaab] ‘dogs’ is [ʔaklebt] in Ethiopian Semitic, Jibbali, and Old South Arabian (Ratcliffe 1998: 190).

7.2 Pseudometathesized templates in LB

The discussion in section 4 implies that LB and MR must not have pseudometathesized forms. The reason is that the two dialects mimic stage three of phase one in which syncope took place and complex onsets were allowed. Nevertheless, both LB and MR

Table 21. LB pseudometathesized broken-plural forms.

	Singular	SA plural	LB plural	Gloss
(a)	[xabar]	[ʔaxbaar]	[ʔaxbaar]	news
(b)	[ħaal]	[ʔaħwaal]	[ʔaħweel]	situation
(c)	[ʒiil]	[ʔaʒjaal]	[ʔaʒjeel]	generation

Table 22. MR pseudometathesized broken-plural forms.

	Singular	SA plural	MR plural	Gloss
(a)	[dawaaʔ]	[ʔadwij-a(t)]	[ʔadwij-a]	medicine
(b)	[ʔaniij]	[ʔaʔniij-aaʔ]	[ʔaʔniij-a]	rich
(c)	[nabij]	[ʔanbij-aaʔ]	[ʔanbij-a]	Prophet

have several pseudometathesized broken-plural forms, as Tables 21 and 22 illustrate. The MR data is from Harrell (2004: 126).

One plausible explanation is that these plural words are borrowings from SA, as Ratcliffe (2002: 96) originally notes about MR (or, as Versteegh (1984) would analyze them, they are the result of decreolization). The influence of SA on present-day Arabic dialects may be detected in what is called Educated Spoken Arabic. Listening to conversations held by educated native speakers of Arabic, one cannot but observe that such speakers have internalized and actually use in daily communication SA terms and expressions that were once employed only in printed material (e.g. books) and in some forms of media (e.g. news broadcasting).¹²

8 Conclusion

This paper set out with two purposes. It tried to provide an analysis that is missing from McCarthy and Prince's (1990) otherwise superb study on the Arabic broken plural and prosodic morphology. In addition, it meant to offer a broader take-home message: A linguistic phenomenon that cannot be explained language-internally might have replicated itself – at least in part – in some related dialect(s).

Notes

1. I would like to thank Caroline Wiltshire and Andrea Dallas for their feedback. I am also grateful to two anonymous *Word Structure* reviewers and to Greg Stump; their comments helped me revise the article extensively. All errors remain mine.
2. As a native speaker of LB who is educated in SA, I provide the LB and SA data. I double-checked the SA data against the following references: Al-Razihy (1973), Al-Ghalayini (2002), and Ryding (2005). The data from the other dialects were collected from other sources which I acknowledge in the body of the article.
3. Interestingly, McCarthy and Prince do mention this problem briefly at the very end of their article: 'Although ʔ insertion is the normal postlexical mode of supplying an onset in Arabic,

the *ʔ* derived by *Ca* Metathesis is demonstrably different from this, since it appears even when the preceding words end in a consonant' (280). No further explanation is provided. See also Ratchliffe (1998: 78).

4. Growing up, my generation of Lebanese speakers of Arabic were exposed to SA as used in news broadcasting and soap operas, but more importantly in cartoons such as [ʔas-sanaafir] 'The Smurfs' and [muyɑ:marɑ:t sindiba:d] 'The Adventure of Sinbad', among several others.
5. Blevins and Garrett (1998) remain silent about which forms are underlying representations and which are surface forms.
6. I argued in Section 2 that the glottal stop in the three templates under examination does not behave like an epenthesised segment and that it must belong to the underlying forms of the templates. Synchronically, this is true. Diachronically, however, pseudometathesis tells a different story. In the rest of this section, I suggest that the glottal stop must have started as an epenthesised segment only to become a part of the underlying forms at a later stage. Section 5.2 shows that a similar phenomenon is manifest in modern Arabic.
7. This fact may equally support the speculation that the deleted vowel in the templates /CVCCaaC/, /CVCiC/, and /CVCuC/ was originally *i* or *u*.
8. Although [ʔakðab] 'untruthful' in [maa ʔakðab-a-hu] 'how untruthful' is an adjective, it is usually referred to as a verb of surprise or an adjectival verb. The reason is that forms like [ʔakðab] are normally derived from adjectival roots, and they take on Stem IV verbal template [ʔafʔal] (see Ryding 2005: 519 and works within). They may even be used as estimative, 3rd person singular, past tense verbs; for example, [ʔakðab-a-hu] may mean 'he thought him, or he found him to be, untruthful' (Wright (1859, 2007: 34)).
9. I have not been able to collect examples of 'verbs of surprise' in Moroccan Arabic. As far as I know, however, these are homophonous with adjectives of color and defect and most probably behave the same. For example, the adjective of defect [ʔaʕma] 'blind' may also be used as a verb of surprise in [maa ʔaʕmaa-h] 'how blind he is'. Concerning Stem IV verbs, Harrell (2004: 34) holds that it is not used in Moroccan Arabic.
10. This hypothetical situation is actually attested in several languages, including Arabic itself. It is similar, though not necessarily identical, to Versteegh's (1984, 2004) tripartite language change process of pidginization, creolization, and decreolization.
Versteegh (1984, 2004) argues that the different Arabic dialects are all derived from Classical Arabic – or what I have been referring to in a rather general way as SA. They took the form they have today through a process of pidginization, creolization, and decreolization. To elaborate, the rapid Arab-Islamic expansion during the 7th and 8th century brought about new territories and new speakers who had to learn the Arabic language. They did so informally (not in a classroom) and quite fast in order to be able to communicate with their new masters. The result was 'imperfect' or 'simplified' varieties of Classical Arabic. These varieties are called pidgins. Subsequently, the pidginized varieties of Arabic were acquired by first language learners, resulting in creoles. The two processes of pidginization and creolization were later followed with a process of decreolization – or (partial) reconvergence with Classical Arabic. Given that the new speakers – especially in cities – were not isolated from the Arab-Islamic culture and from Classical Arabic, the creoles were 'strongly influenced by the Classical norm and, consequently, affected by a constant process of leveling towards that norm' (Versteegh 1984: 129).
11. This is a modification of McCarthy and Prince's (1988) constraint:
Maximal Stem Constraint: Templates are maximally disyllabic (p. 25). McCarthy holds that this new constraint is possible (personal communication).

12. Note, however, that some of these forms have unpseudometathesized variants in the dialects. For example, to many LB speakers [ʔaxbaar] ‘news’ in Table 21a may also be realized as [xbaar], especially in less formal register (e.g. [ʔuu xbaar-ak] ‘how are you?’ or, literally, ‘what are your news’).

References

- Abboud, Peter F. 1979. The verb in Northern Najdi Arabic. *Bulletin of the School of Oriental and African Studies* 42: 467–499.
- Al-Ghalayini, Al-Shaykh Mustafa. 2002. *Complete collection of Arabic lessons (ʔaamiʔal-duruus ʔal-ʔarabijjat)*. Beirut: daar al-kutub al-ʔilmijjat.
- Al-Raʔihi, Abdo. 1973. *Morphological application (al-tatʔbiq al-ʔarfij)*. Beirut: daar al-naħdʔa l-ʔarabijjat.
- Blanc, Haim. 1970. The Arabic dialect of the Negev Bedouins. *Proceedings of the Israel Academy of Sciences and Humanities* 4: 112–150.
- Brame, M. 1973. On stress assignment in two Arabic dialects. In Stephen Anderson & Paul Kiparsky (eds.), *A Festschrift for Morris Halle*. New York: Holt. 14–25.
- Brame, M. 1974. The cycle of phonology. *Linguistic Inquiry* 5: 39–60.
- Cowell, M. 1964. *A reference grammar of Syrian Arabic*. Washington, D.C.: Georgetown University Press.
- Ferguson, Charles (1959, 1997) The Arabic koine. In R. Kirk Belnap & Niloofar Haeri (eds.), *Structuralist Studies in Arabic Linguistics*. Leiden and New York: Brill. 50–68.
- Garrett, Juliette & Andrew Blevins. 1998. The origins of consonant-vowel metathesis. *Language* 74: 508–556.
- Harrell, Richard S. 2004. *A short reference grammar of Moroccan Arabic*. Washington D.C.: Georgetown University Press.
- Holes, Clive. 1994. *Modern Arabic*. London: Longman.
- Hume, Elizabeth V. 1997. Vowel preservation in Leti. *Oceanic Linguistics* 36: 65–101.
- Hume, Elizabeth V. 1998. Metathesis in phonological theory: The case of Leti. *Lingua* 194: 147–186.
- Hume, Elizabeth. 2004. The indeterminacy/attestation model of metathesis. *Language* 80: 203–237.
- Hyman, Larry 1977. Phonologization. In Alphonse Juilland (ed.), *Linguistic studies offered to Joseph Greenberg*. Saratoga: Alma Libri. 407–418.
- Kager, René. 1999. *Optimality Theory*. Cambridge: Cambridge University Press.
- Katamba, Francis. 2001. Skeleta and the prosodic circumscription of morphological domains. In Charles W. Kreidler (ed.), *Phonology: Critical concepts in linguistics*. England: Routledge, Taylor and Francis Group. 272–274.
- Kaye, Alan S. 1991. The Hamzat al-wasʔl in contemporary Modern Standard Arabic. *Journal of the American Oriental Society* 111: 572–574.
- Kenstowicz, Michael & Kamal Abdul-Karim. 1980. Cyclic stress in Levantine Arabic. *Studies in the linguistic sciences* 10: 55–76.
- Kiparsky, Paul. 2003. Syllables and moras in Arabic. In Caroline Féry & Ruben van de Vijver (eds.), *The syllable in Optimality Theory*. Cambridge: Cambridge University Press. 147–182.
- Levy, Mary. 1971. *The plural of the noun in Modern Standard Arabic*. Ph.D. dissertation, University of Michigan, Ann Arbor.

- McCarthy, John. 1991. Semitic gutturals and distinctive feature theory. In Bernard Comrie & Mushira Eid (eds.), *Perspectives on Arabic linguistics*, III. Amsterdam/Philadelphia: John Benjamin Publishing Company. 63–92.
- McCarthy, John. 1995. Extensions of faithfulness: Rotuman revisited. Ms. University of Massachusetts, Amherst. [Available on Rutgers Optimality Archives <http://ruccs.rutgers.edu/roa.html> ROA 110–0000]. (May 2008).
- McCarthy, John & Alan Prince. 1988. Prosodic morphology and templatic morphology. In Mushira Eid & John McCarthy (eds.), *Perspectives on Arabic linguistics*, II. Amsterdam/Philadelphia: Benjamins. 1–54.
- McCarthy, John & Alan Prince. 1990. Foot and word in prosodic morphology: the Arabic broken plural. *Natural Language and Linguistic Theory* 8: 209–283.
- Ohala, John J. 1993. The phonetics of sound change. In Charles Jones (ed.), *Historical linguistics: Problems and perspectives*. London: Longman. 237–278.
- Owens, Jonathan. 2006. *A linguistic history of Arabic*. Oxford: Oxford University Press.
- Prince, Alan & Paul Smolensky. 1993. *Optimality Theory: Constraint interaction in generative grammar*. New Brunswick, NJ: Rutgers University Center for Cognitive Science. [Available on Rutgers Optimality Archive, <http://ruccs.rutgers.edu/roa.htm> ROA-537]. (May 2008).
- Prince, Alan & Bruce Tesar. 1999. *Learning phonotactic distributions*. Technical Report RuCCS-TR-54, Rutgers Center for Cognitive Science, Rutgers University, New Brunswick. [Available on Rutgers Optimality Archive, <http://ruccs.rutgers.edu/roa.htm> ROA-353]. (May 2008).
- Prochazka, Theodore. 1981. The Shii'I dialects of Bahrain and their relationship to the Eastern Arabic dialect of Muḥarraḡ and the Omani dialect of al-Ristaāq'. *ZAL* 6: 16–55.
- Ratcliffe, Robert. 1998. *The 'broken' plural problem in Arabic and comparative Semitic*. Amsterdam/Philadelphia: Benjamins.
- Ratcliffe, Robert. 2002. The broken plural system of Moroccan Arabic: Diachronic and cognitive perspective. In Dilworth B. Parkinson & Elabbas Benmamoun (eds.), *Perspectives on Arabic Linguistics*, II. Amsterdam/Philadelphia: Benjamins. 87–110.
- Ryding, Karin. 2005. *A reference grammar of Modern Standard Arabic*. Cambridge: Cambridge University Press.
- Versteegh, Kees. 1984. *Pidginization and creolization: The case of Arabic*. Amsterdam/Philadelphia: Benjamins.
- Versteegh, Kees. 1997. *The Arabic language*. Edinburgh: Edinburgh University Press.
- Versteegh, Kees. 2004. Pidginization and creolization revisited: The case of Arabic. In Martine Haak, Rudolf de Jong & Kees Versteegh (eds.), *A Festschrift for Manfred Woidich*. Leiden: Brill. 343–358.
- Wiltshire, Caroline. 1998. Extending ALIGN constraints to new domains. *Linguistics* 36: 423–467.
- Wright, W. 1859, 2007. *A grammar of The Arabic language*. London: Simon Wallenberg Press.

Author's addresses: (Youssef A. Haddad)
Lebanese American University
Department of Humanities
P.O. Box 36
Byblos
Lebanon
E-mail: yhaddad100@gmail.com

Copyright of Word Structure is the property of Edinburgh University Press and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.