

On the biconsonantal roots of Lebanese Arabic

This paper examines biconsonantal roots in Lebanese Arabic as a core part of the morphosyntactic paradigm in the language. A better understanding of the templates and patterns by which this type of root manifests allows for a precise description of their behavior and status within the system. Biconsonantal roots show a geminated C₂ as well as a glide preceding the inflectional suffixes for the 1st and 2nd persons in form I, typical of final-weak roots, e.g. *maddayte* ‘you fem. extended’ (biconsonantal) and *sallayte* ‘you fem. entertained’ (final-weak). Final-weak roots are triconsonantal roots wherein the third and last consonant is either the palatal glide ‘y’ or the labiovelar ‘w’. The data shows that the glide in biconsonantal roots (*maddayte* above) is a byproduct of Arabic morphology as dictated by phonotactics, unlike final-weak glides (*sallayte* above), which are a part of the root. The biconsonantal glide appears after a diphthongization process of a long vowel, which in turn is the result of lengthening an epenthetic vowel. The conclusion reached in this paper thus enables biconsonantal roots to be analyzed systemically and classified properly, morphologically and semantically as well, because the templatic morphology of Lebanese Arabic is closely related to its semantics (being a non-concatenative language, a process as simple as vowel ablaut can yield different meanings), paving the way for a more comprehensive and complete picture of the Lebanese Arabic verbal system. More specifically, the analysis allows for a rigorous distinction between what is final-weak and what is biconsonantal with an additional glide.

1. Introduction

Lebanese Arabic (LA) is a Levantine variety of modern Arabic spoken in Lebanon. While its templatic morphosyntax is reminiscent of that of Classical Arabic’s, it is by no means identical, nor is LA’s system a continuation of the latter. There are many reasons to believe that LA is not a direct descendant of Classical Arabic (Owens 2006, Kaye 2007, Al-Jallad 2012, Huehnergard 2017 and others). LA, much like other modern varieties of Arabic, does not make use of all of the ‘possible’ forms, binyanim or measures (Kaye 1994, Watson 2002). These forms or templates are based on a root system, containing root radicals or core consonants. These roots are either biconsonantal or triconsonantal.¹ The roots are then projected unto a pattern (or template) to

¹ Quadriconsonantal roots are possibly an innovation, also cf. El Zarka 2005.

yield a certain meaning. The ‘default’ type of root is that which yields a ‘sound’ or strong verb, such a root consists of three obstruents and poses no theoretical issues morphophonologically. Weak verbs, on the other hand, are the ones which contain one or more glides in their triconsonantal root, or are based on a biconsonantal root. While there are proposals that modern varieties of Arabic are based on stems (Farwaneh 2020), this paper proposes a root system for LA, which may not be shared with other varieties. Nonetheless, the strong/weak distinction holds regardless of whether the lexicon is based on roots or stems (Chekayri 2004, Farwaneh 2007).

As such, LA must be studied and investigated in its own right, as the data suggests that the language behaves rather differently to what is found in Levantine varieties (see section 3), much less Classical and Modern Standard Arabic. There is a multitude of studies examining weak verbs in both Classical and Modern Standard varieties of Arabic (Schramm 1962, Mitchell 1981, Wightwick & Gaafar 2008 among others) and even some on those of Levantine Arabic (Farwaneh 2020), but LA’s unique behavior as per these verbs means it should be studied separately. LA differs from Syrian, Jordanian and Palestinian Arabic when it comes to weak verbs.

The most basic of these templates is the $C_1aC_2aC_3/C_1iC_2iC_3$ template for strong triconsonantal verbs (Khalil 2023), which is the unmarked binyan² of LA termed form I. Form I yields a verb in its bare semantics, that is, without much of the complexity that arises with other forms. Consider the triconsonantal root *k-s-r*.

- (1) Root *k-s-r* ‘related to breaking’
 Form I *kasar* ‘to break something’

This root, for instance, is used to form words ‘related to breaking’. Projecting the root unto form I results in *kasar* ‘to break something’. In this sense, form I is considered semantically ‘basic’.

The regular behavior of this verb in the perfective, attributed to its root having three obstruents, is shown below:

² Form I, the first binyan, measure, or weight.

- (2) Perfective form I of a sound triconsonantal root (three obstruents as root radicals)

Root	<i>k-s-r</i> ‘related to breaking’
1 st sg.	<i>kasar-(e)t</i>
2 nd sg. masc.	<i>kasar-(e)t</i>
2 nd sg. fem.	<i>kasar-te</i>
3 rd sg. masc.	<i>kasar</i>
3 rd sg. fem.	<i>kasar-it</i>
1 st pl.	<i>kasar-na</i>
2 nd pl.	<i>kasar-to</i>
3 rd pl.	<i>kasar-o</i>

The data shows that the conjugation patterns for such a root in form I are regular, leaving the root, with its vocalic melody, intact. Such a strong verb poses no problems with regard to its templatic patterning (see (2) above), as the templates themselves contain three consonantal slots, i.e. $C_1aC_2aC_3(-I_{\text{inf}})$, with I_s being the inflectional suffix. Weak verbs, however, require special attention to their pattern, as it may not fit into the regular templates.

2. Forms I and II

Regular and ‘irregular’ behaviors of forms I and II in LA must be examined in order to be able to identify the internal consonantal and vocal manifestations of each verb. According to Khalil (2023), LA’s forms I and II exhibit a unique morphosyntactic situation. Khalil shows that, in LA, form II is strictly causative, meaning that all other functions which manifest using form II are only homophones thereof and not bona fide form II. Khalil shows that what is traditionally described as denominative, estimative, intensive or other functions of form II are actually allomorphs of form I. Here are the possible cases:

- (3) If Form I: only CaCaC → No causative form II, intensive allomorph of form I: CaCCaC
 If Form I: only CiCiC → Form II: CaCCaC
 If Form I: both CaCaC and CiCiC, and both have the same meaning → Form II: CaCCaC
 If Form I: both CaCaC and CiCiC, and both have different meanings → No causative form II, intensive allomorph of form I: CaCCaC
 If Form I does not exist as CaCaC or CiCiC, then CaCCaC (homophonous with form II) is form I, the latter essentially being the traditionally denominative form II verb.

The key takeaway from these findings is that *not every* geminate C₂ pattern, or more abstractly a CC medial pattern (i.e. CaCCaC), is to be considered form II. This will prove especially helpful when looking at the data for weak verbs. That said, Khalil only examines triconsonantal roots wherein all three root radicals are obstruents. The weak/biconsonantal patterns are yet to be described.

3. Final-weak and Biconsonantal Verbs

Final-weak verbs are verbs which include a glide in their third and final root radical C₃. Example (4) illustrates such a verb.

(4) Root *γ-ṭ-y* ‘related to covering’

Form I *γaṭṭā* ‘to cover’

1 st sg.	<i>γaṭṭayt</i>
2 nd sg. masc.	<i>γaṭṭayt</i>
2 nd sg. fem.	<i>γaṭṭayte</i>
3 rd sg. masc.	<i>γaṭṭā</i>
3 rd sg. fem.	<i>γaṭṭit</i>
1 st pl.	<i>γaṭṭayna</i>
2 nd pl.	<i>γaṭṭayto</i>
3 rd pl.	<i>γaṭṭo</i>

The fact that this verb is not necessarily form II in LA is consolidated by the above discussion in Khalil (2023), since not every geminate C₂ pattern must be form II. Furthermore, it is clear that *γaṭṭā* is ‘to cover’ and not ‘to make someone cover’, which indicates that this verb is not causative and therefore cannot be considered of form II.

The verb in (5) is an example of a biconsonantal root which shares the first two root radicals of (4), leading to a homophonous situation:

(5) Root $\gamma\text{-}t$ ‘related to immersion, related to falling (by extension, to sleep)’, Form I γatt ‘to dip’

1 st sg.	γattayt
2 nd sg. masc.	γattayt
2 nd sg. fem.	$\gamma\text{attayte}$
3 rd sg. masc.	γatt
3 rd sg. fem.	γattit
1 st pl.	$\gamma\text{attayna}$
2 nd pl.	$\gamma\text{attayto}$
3 rd pl.	γatto

If not for the 3rd singular masculine, there would have been no morphophonological distinction between the verbs in (4) and (5), and, taken at face value, one might mistake them for being of the same root. Example (6) presents another verb in order to avoid the homophony that arises in (4) and (5).

(6) Root $m\text{-}d$ ‘related to extension’ (Biconsonantal/geminate-final root)
Form I $madd$ ‘to extend’

1 st sg.	$maddayt$
2 nd sg. masc.	$maddayt$
2 nd sg. fem.	$maddayte$
3 rd sg. masc.	$madd$
3 rd sg. fem.	$maddit$
1 st pl.	$maddayna$
2 nd pl.	$maddayto$
3 rd pl.	$maddo$

The immediate issue to tackle here is the presence of a palatal glide in a biconsonantal/geminate-final root. If the glide is considered a part of the verb/root, then the pattern obtained here would be $C_1aC_2C_2aC_3\text{-}C_{\text{infl}}$. If the glide, however, is not part of the verb/root, then the pattern is $C_1aC_2C_2aGC_{\text{infl}}$. If we argue for the former, i.e. the glide being a part of the verb/root, this would mean that biconsonantal verbs and final-weak verbs are one and the same.

Chekayri and Scheer (1996, 2003, 2005) argue for such an analysis for Classical Arabic. Through apophony, they describe the nature of the glides in weak verbs, and then maintaining that these glides are not part of the root, but the result of anarchy. One of their arguments is that some hollow verbs may be found with both /w/ and /y/. Hollow verbs are those which have a glide in the medial (C_2) root radical. Chekayri and Scheer talk about free variation in these hollow verbs, that it makes no difference whether one says /w/ or /y/. This is

not the case in LA, free variation as such in the verbal system does not exist. Moreover, minimal pairs can be found as in (7):

- (7) *nawwam* ‘to hypnotize someone’
nayyam ‘to put someone to sleep’

Whether these two verbs in (7) share the same root is doubtful, but this, at least, tells us that not incorporating glides into roots/stems does not work for LA, as Chekayri and Scheer’s proposal argues that glides do not factor in the surface form of Arabic verbs. This is clearly not the case in LA; whether a verb has a palatal or a labial glide is essential to its semantics: LA glides are phonemic, (7) shows a minimal pair.

Farawneh (2020) offers an alternative analysis which shows glides in root radical positions, but shows that these glides do not surface in any form in Levantine Arabic. This is where LA deviates from other Levantine varieties. The glide appears in both final-weak and biconsonantal verbs, which is what this paper attempts to explain. Furthermore, Farawneh’s analysis is predicated on ranking constraints in an Optimality Theoretical framework, most of which do not exist for LA (qua constraints). To cite one example of these constraints, Farawneh says that Levantine imperative verbs whose stem begins with a consonant cluster such as /ktub/ undergo “mandatory consonantal epenthesis” to become [ʔuktub] (foot binarity). This is not true in the case of LA, no such constraint exists, and as a matter of fact, the imperative of the root *k-t-b* ‘related to writing’ is indeed *ktob*.

3.1 Digression on Final-weak Verbs

Example (4) above with a final-weak verb, while being almost identical to (5), which shows a biconsonantal verb, does not present the full picture regarding final-weak verbs. It is this geminated medial consonant in a final-weak verb that must be explained. We know that geminating the medial consonant of a verb yields a verb of form II. Khalil (2023) argues that in LA, since form II is a ‘higher’ derived form, it must have a corresponding form I. Any verb which lacks a form I (CaCaC for triconsonantal roots), cannot have a causative form II, and the verb obtained via geminating the middle consonant (i.e. CaCCaC) is an allomorph of form I.

Repeated here are the possible form I patterns for triconsonantal roots in LA:

- (8) a. CaCaC as in *ʔatal* ‘to kill’
 b. CiCiC as in *ʔitil* ‘to die’
 c. CaCCaC (denominative/intensive form I) as in *ʔattal* ‘to massacre’

A triconsonantal root may have all patterns, i.e. (8ab) and (8c), or two of them (8a) and (8c) or (8b) and (8c), or just (8c) in the case of denominative form I (homophonous with form II, the latter of which is said to be exclusively causative).

Based on the example in (4), one possible pattern is CaCCā, and CaCCaGI_s when conjugated, which means that, since the glide is part of the root, this pattern for final-weak verbs actually corresponds to CaCCaC for triconsonantal roots.

Example (9) shows a different final-weak verb with a pattern that does not have a geminate medial consonant:

(9) Root ʔ-l-y ‘related to frying’

Form I ʔalā ‘to fry’

1 st sg.	ʔalayt
2 nd sg. masc.	ʔalayt
2 nd sg. fem.	ʔalayte
3 rd sg. masc.	ʔalā
3 rd sg. fem.	ʔalit
1 st pl.	ʔalayna
2 nd pl.	ʔalayto
3 rd pl.	ʔalo

As with previous examples, the 3rd person conjugations notwithstanding, this verb is of the pattern CaCaGI_s, corresponding to CaCaC.

The last type of final-weak verb pattern is given in (10):

(10) Root ħ-l-G³ ‘related to sweetness’

Form I ħilē ‘to become sweet’

1 st sg.	ħlīt
2 nd sg. masc.	ħlīt
2 nd sg. fem.	ħlīte
3 rd sg. masc.	ħilē
3 rd sg. fem.	ħilit
1 st pl.	ħlīna
2 nd pl.	ħlīto
3 rd pl.	ħilo

³ The identity of the glide, shown here as G, is unclear, it is possible that it could be either, or that we have two different roots with each of them.

The verbal pattern in (10) is reminiscent of the CiCiC pattern of triconsonantal verbs in form I.

Based on this, we may lay down the possible form I patterns for final-weak verbs:

- (11) a. CaCā as in *ʔalā* ‘to fry’
 b. CiCē as in *ḥilē* ‘to become sweet’
 c. CaCCā as in *yaṭṭā* ‘to cover’

4. The Problem

The possible patterns for final-weak and biconsonantal verbs will be repeated here: final-weak CaCa(C), CiCe, CaCCaC (form I, cf. (4) above), CaCCaC (form II).

Some words on the last pattern must be repeated here: According to Khalil (2023), LA verbs can have a form II provided they have a form I (see sections 2 and 3), this means that it is possible to obtain a CaCCaC pattern for final-weak verbs which is form II (distinct from what is found in (4)).

Example (12) illustrates the difference between a final-weak form II verb and a form I CaCCaC verb such as the one in (4):

- (12) Root *ḥ-l-G* ‘related to sweetness’
 Form I *ḥilē* ‘to become sweet’
 Form II *ḥallā* ‘to make s.t. sweet’
- | | |
|---------------------------|-----------------|
| 1 st sg. | <i>ḥallayt</i> |
| 2 nd sg. masc. | <i>ḥallayt</i> |
| 2 nd sg. fem. | <i>ḥallayte</i> |
| 3 rd sg. masc. | <i>ḥallā</i> |
| 3 rd sg. fem. | <i>ḥallit</i> |
| 1 st pl. | <i>ḥallayna</i> |
| 2 nd pl. | <i>ḥallayto</i> |
| 3 rd pl. | <i>ḥallo</i> |

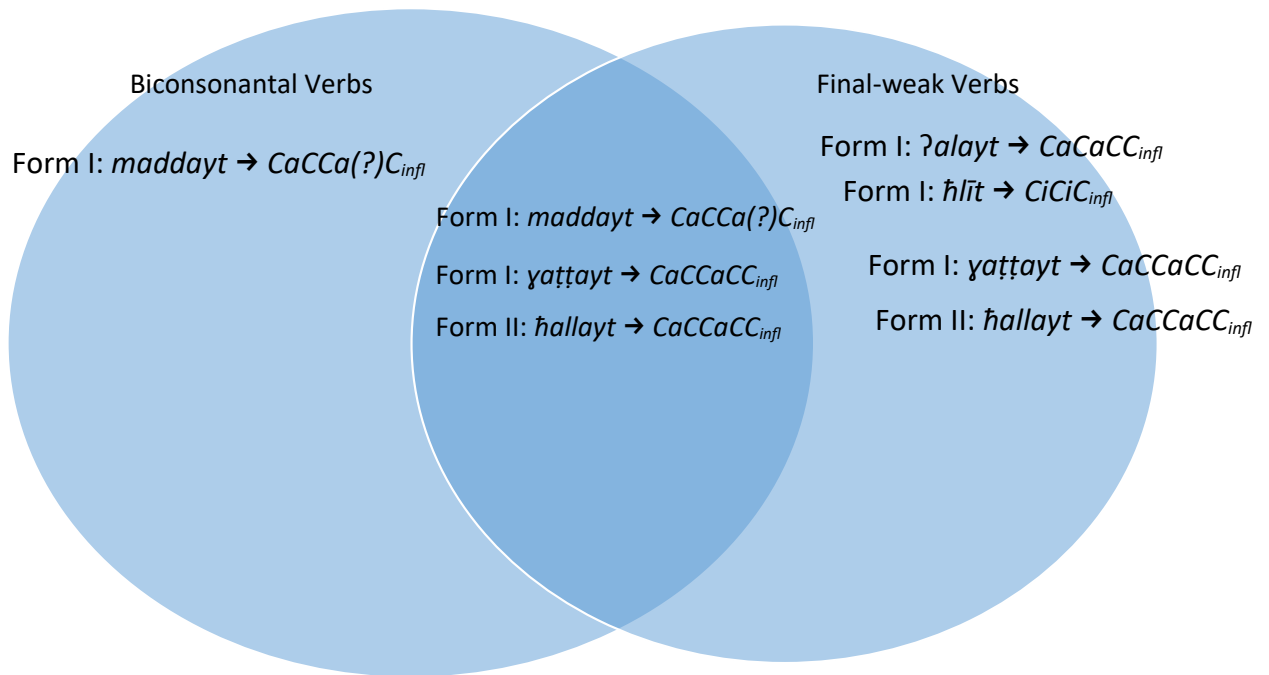
Note the pattern obtained for form I in (12) for this root, which is distinct from the causative form II (CaCCaC).

This means that biconsonantal verbs and final-weak ones are homophonous for two morphophonological patterns:

- (13) A. Biconsonantal form I (CaCCaC) = Final-weak form I (CaCCaC, (4)).
 B. Biconsonantal form I (CaCCaC) = Final-weak form II (CaCCaC from a non-geminate form I, see (11)).

(14) illustrates the current situation.

(14) Venn diagram showing forms where biconsonantal and final-weak roots are homophonous.



A minor issue surfaces here: Biconsonantal verbs of form I were compared to and found to be similar to final-weak verbs of form I and II. What about biconsonantal verbs of form II? While it is out of the scope of this paper to go into the morpho-semantics of biconsonantal verbs, especially ‘higher’ forms, the overarching pattern to be considered here is *CaCCaGC_{infl}* (see above), and it will be assumed that, if form II for biconsonantal verbs exists as such, then it will either be of the pattern *CaCCaGC_{infl}*, or otherwise be irrelevant to the study at hand. That said, the focus here is why and how the glide appears in biconsonantal verbs.

5. Other Varieties of Arabic

El Zarka (2005: 373) provides an account of the consonantal composition of the CvCCvC pattern, with different possible C permutations. In her account, she mentions five possible combinations, listed as follows:

“katkat (with a reduplicated root or syllable)

katkab (with a doubled C₁)

kattab (with a doubled (i.e., geminated) C₂)

katbab (with a doubled C₃)

C₁C₂C₃C₄”

Whereas this list captures most of the possible patterns, it does not recognize C₁vC₂C₂vG as a manifestation of the same CvCCvC template. El Zarka only discusses biconsonantal roots in light of reduplication, which yields a CvCCvC pattern, but not the aforementioned C₁vC₂C₂vG. This may be due to two reasons. First, glides can be seen as an extension of vocalic realization. For example, the root for names *s-m-G* appears as *sammā* in the 3rd singular masculine (taken to be the default pattern). In the latter, the final glide can be seen transforming into a long ‘ā’ and thereby losing its consonantal status.

The second reason C₁vC₂C₂vG may have been overlooked is closely tied to the first reason. C₁vC₂C₂vG does not occur as a pattern in isolation, that is to say that it does not occur as a conjugation of the 3rd singular/plural masculine/feminine verb, taken to be the default,⁴ but only manifests when it is conjugated for the 1st and 2nd person singular and plural (cf. (6) above). This means that C₁vC₂C₂vG only appears as C₁vC₂C₂vG-t/ C₁vC₂C₂vGtī/ C₁vC₂C₂vG-na/ C₁vC₂C₂vG-tō, i.e. this glide can only appear pre-consonantly and never word-finally.

If the latter was the reason for overlooking C₁vC₂C₂vG patterns, then analysis is still needed to account for the glide that appears in biconsonantal root verbs in the 1st and 2nd singular and plural conjugations.

6. The Epenthetic Vowel

To start looking into the issue, let us consider the inflectional suffixes for the 1st, 2nd and 3rd person singular and plural perfective patterns.

⁴ CvCvC/CvCCvC patterns take the 3rd singular masculine as their default conjugation, in that the inflectional suffix is the zero morph \emptyset .

(15) Lebanese Arabic perfective inflectional suffixes

1. 1 st singular	-t
2. 1 st plural	-na
3. 2 nd singular masculine	-t
4. 2 nd singular feminine	-te
5. 2 nd plural	-to
6. 3 rd singular masculine	∅
7. 3 rd singular feminine	-it
8. 3 rd plural	-o

The input for biconsonantal roots consists of two root radicals, which for the default pattern, i.e. the 3rd singular masculine, yields a $C_1aC_2C_2$ pattern, since the inflectional suffix is zero. Consider the rest of the suffixes, however. Taken at face value, each of the suffixes in (15), with the exception of the 3rd person suffixes, would yield a $C_1aC_2C_2C_s/C_1aC_2C_2C_s v^5$ pattern. And while a consonant cluster which includes three consonants followed by a vowel is attested in LA *nominals* (albeit dispreferred), it does not seem to be a licensed phenomenon in LA verbs (also cf. El Zarka 2005: 382).

Thus, it appears that a vowel is inserted somewhere in the consonant cluster in order to split it. This is strikingly similar to what is found in Classical Arabic verbs of a biconsonantal root. In Classical Arabic, $C_1vC_2C_2C_s$ is unlicensed and thus the pattern shows a vowel between the geminate/copy C_2 . This means that Classical Arabic $C_1vC_2vC_2C_s(v)$ pattern looks *as if* the second vowel is epenthetic and only serves as a cluster-breaker, adhering to the $CvCvC$ pattern found in regular, basic verbs. In LA, however, the vowel appears between the root consonant and the inflectional suffix, yielding a $C_1vC_2C_2v_eC_s$ pattern.

This analysis details the mechanism which inserts an epenthetic vowel. What remains to be discussed, therefore, is the exact environments that trigger this vowel. Haddad (1984) distinguishes between two types of epenthesis. The first, which he terms ‘epenthesis’, is an optional epenthetic vowel between a series of two consecutive consonants. The second process, i.e. the one under study in this paper, he calls ‘vowel insertion’. To Haddad, it might have been important to make such a distinction, but the nature of the phonological process, i.e. what qualifies as epenthesis and what does not, is out of the scope

⁵ ‘ C_s ’ is an inflectional suffix.

of this current paper, and thus the vowel will still be considered an instance of epenthesis. Haddad argues that the vowel is inserted in what he calls “stranded syllables”, which is a consonant cluster where the coda of a certain syllable is found as CCC#. Such a cluster is illicit, and the epenthetic vowel is inserted after the penultimate consonant to break it up, leading to an acceptable structure. This, in turn, confirms that the geminate C₂ in biconsonantal roots is underlying. If *šam* ‘to smell’ was underlyingly *š-m-C_s*, then the verb would have been **šamt/*šamta* (as verbs) ‘I smelled/ I smelled it or she smelled it’, but this is not the case. The verbs are underlyingly *šammt/šammta*, i.e. CCC_s, and this is why epenthesis is necessary. If this cluster were CC, i.e. *šamt/šamta* (as nouns), then the former would not need the “epenthetic” vowel of Haddad’s analysis, as it is already licensed as such, *šamt* ‘gloating (n.)’, and the latter remains *šamta* ‘her gloating’ as the consonant cluster there is not tautosyllabic.

What further bolsters this assumption is the consistency found when the 3rd singular feminine is examined. The suffix being *-it* already incorporates a vowel, preventing the consonant cluster from forming. (16) illustrates this with a biconsonantal root *ʕ-d* ‘related to counting’ shown conjugated in both Classical and Lebanese Arabic.

(16) A biconsonantal root conjugated in Classical and Lebanese Arabic

Classical Arabic ⁶	Lebanese Arabic
1. 1 st sg.: <i>*ʕaddt(u) > ʕadadt(u)</i>	<i>*ʕaddt > ʕaddaGt</i>
2. 1 st pl.: <i>*ʕaddnā > ʕadadnā</i>	<i>*ʕaddna > ʕaddaGna</i>
3. 2 nd sg. masc.: <i>*ʕaddt(a) > ʕadadt(a)</i>	<i>*ʕaddt > ʕaddaGt</i>
4. 2 nd sg. fem.: <i>*ʕaddtī > ʕadadtī</i>	<i>*ʕaddti > ʕaddaGti</i>
5. 2 nd pl.: <i>*ʕaddtum > ʕadadtum (masc.)</i>	<i>*ʕaddto > ʕaddaGto</i>
6. 3 rd sg. masc.: <i>ʕadd(a)</i>	<i>ʕadd</i>
7. 3 rd sg. fem.: <i>ʕaddat</i>	<i>ʕaddit</i>
8. 3 rd pl.: <i>ʕaddū(n)</i>	<i>ʕaddo</i>

Building on the data in (16), it is possible to assume that the glide emerges as a surrogate final consonant, keeping up with the Classical Arabic CvCvC pattern for the same roots. Here, two things must be considered: First, LA does not have to copy everything found in Classical Arabic. This is exemplified by quadrilateral patterns considered to be an innovation of Neo-Arabic varieties

⁶ Only those conjugations which can also be found in LA were included. Classical Arabic has conjugations for the 2nd and 3rd person dual forms, as well as a gender differentiation in the 2nd and 3rd person plurals. These were left out.

(Moscato et al. 1980). Secondly, even if the glide fills in a ‘gap’ left through the transmutation of CvCvC into CvCCv_#, the resulting geminate and the subsequent pattern CvCC(v)(v) is widely attested in LA, which means that such a gap does not necessarily need to be filled to yield verbs. Take for example the verb in (16); it is found as *ʕadd* CvCC in the 3rd sg. masc., while *s-m-G* ‘related to naming’ is found as *sammā* CvCCv(v) conjugated for the same person. As the former does not appear as *ʕaddaG* nor does the latter as *sammaG*, it follows that the glide is not there by necessity but plays some other role. Therefore, the status of the glide still needs to be investigated.

7. Lengthening, Fission, Fusion and Shortening

To understand the genesis of this glide in this position, different varieties of Arabic must be looked at. For this purpose, native speakers of Syrian and Egyptian Arabic were asked to pronounce the verb *šam* ‘to smell’ of which the root is *š-m* ‘related to smelling’ conjugated for the 1st person singular C_s= -*t* with the third person singular masculine and feminine accusative pronominal clitics/suffixes *-ho* and *-ha* respectively. The results are shown in (17).

(17) The verb ‘to smell’ in Lebanese, Syrian, Egyptian, and Classical Arabic

	Lebanese	Syrian	Egyptian	Classical
a.	<i>šammáyto</i> ‘I smelled him/it (masc.)’	<i>šamměto</i>	<i>šamměto</i>	<i>šamámtuh(u)</i>
b.	<i>šammáyta</i> ‘I smelled her/it (fem.)’	<i>šamměta</i>	<i>šammítha</i>	<i>šamámtuha</i>

The data presented in (17) allows for the reconstruction of the path the epenthetic vowel takes to become a full-fledged glide. As shown in (17), the third person singular masculine accusative pronominal clitic *-ho* has lost the /h/, which is not present anymore for all three dialects, leading to similar results in Syrian and Egyptian Arabic. However, the feminine counterpart shows the /h/ persisting in Egyptian. The epenthetic vowel, then, remains short, since it is now part of a closed syllable. In all other examples, the epenthetic vowel lengthens since it sits in an *unstressed* open syllable, yielding a long vowel and therefore attracting stress. In essence, when the epenthetic vowel is inserted, it is found in an unstressed open syllable, and to avoid apocopation, one solution is to lengthen, thereby attracting stress and staying long: *šámměto* (short epenthetic vowel in an unstressed open syllable) → *šamměto* (long, stressed vowel). This is underscored by the fact that unstressed vowels in open syllables cannot be short in Arabic. McCarthy (1979) already describes ‘extensive vowel reduction’ whereby unstressed vowels in open syllables get deleted. Since the

vowel we are dealing with here is epenthetic, deleting it would defy the purpose of its existence, and we end up with the problem of the illicit consonant cluster once again. To avoid having a short, unstressed vowel in an open syllable, the epenthetic vowel has no choice but to lengthen. This is exemplified by the data with the masculine clitic. Arabics with a missing /h/ in the feminine clitic are also found with a long epenthetic vowel (see Lebanese and Syrian in (17b)). In Egyptian Arabic, the feminine clitic retains its original /h/ and thus the epenthetic vowel is ‘saved’ from lengthening as it sits in a closed syllable.

However, when looking at the 1st sg. and 2nd sg. masculine inflectional suffixes, i.e. *-t*, the previous analysis and explanation is not plausible anymore:

(18) *šāmm̄t → *šāmm̄et (first vowel is stressed and short, epenthetic vowel is unstressed and short)

In (18), the epenthetic vowel is not in an open syllable, but it is nonetheless *unstressed*. To begin explaining why it lengthens, a more accurate representation of the epenthetic vowel is needed. In reality, the identity of this vowel is a schwa of some kind. Haddad (1986) discusses this, specifying that the epenthetic vowel is /i/, while not being as tense as the actual high /i/. Here, the epenthetic vowel is taken to be a schwa.

Since this is a high unstressed short vowel, it is at risk of elision (Brame, 1971). Abdo (1969, cited in Brame 1971) even contends that, for Levantine varieties, the short vowel does not have to be high to be apocoped.

This epenthetic vowel as such does not exist in LA’s phonological inventory as one of the primary vowels. Indeed, Birkeland (1952 as cited in Cowan 1970) mentions that Egyptian Arabic has only three short vowels /i u a/ with no */e/ and only a long /ē/, which could explain the similarity in how biconsonantal verbs function in LA as well as Egyptian Arabic (see (17a)). It is then perhaps unsurprising that when the epenthetic vowel sits in a closed syllable in Egyptian Arabic, it raises to /i/ as in *šamm̄itha* ‘I smelled it (fem.)’.

Furthermore, as to why this epenthetic vowel undergoes lengthening, rather than raising to /i/ is precisely because such a remedy to avoid apocope is preempted by the 3rd sg. fem. ending *-it*. The epenthetic vowel, then, cannot be /i/ as this would directly clash with another inflectional suffix already present and established for the 3rd sg. feminine.

Phonetically, Kelly (2020) finds that unstressed vowels are longer if found in phrase-final positions, as well as if the stressed vowel is phonologically short (cf. (18)), and when in an open syllable (cf. (17)). These findings, while

phonetic in nature, show that the epenthetic vowel in question has viable grounds for lengthening.

Example (19) repeats (18) and traces the path of the vowel from an epenthetic short unstressed vowel to a long stressed one:

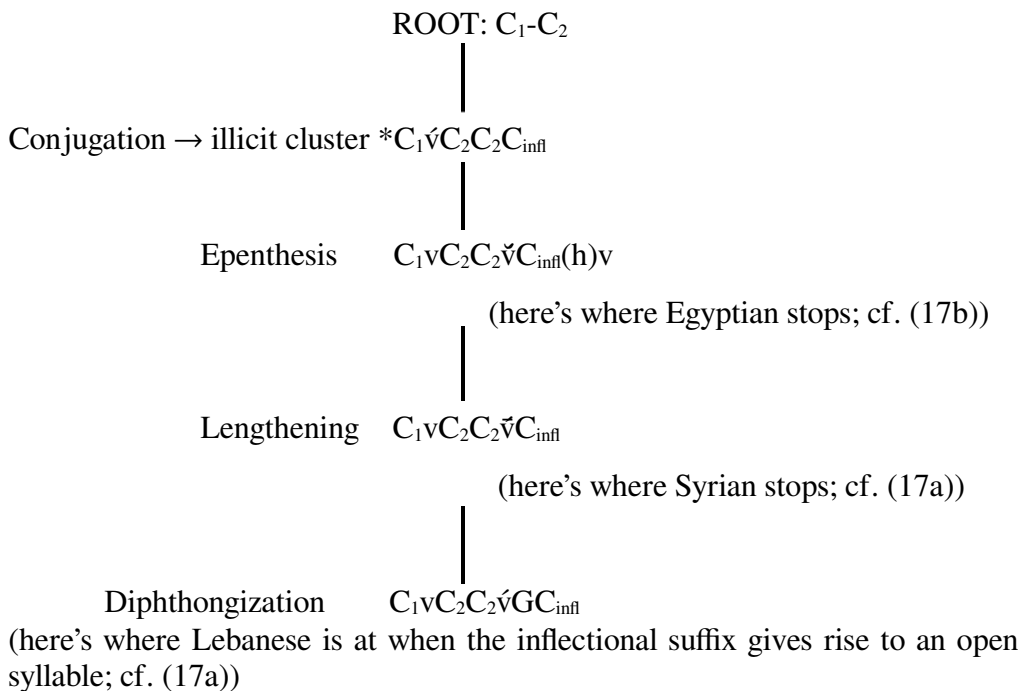
- (19) *šāmmt (illicit cluster) → *šāmmet (short, unstressed epenthetic vowel)
 → šammēt (long, stressed epenthetic vowel).

The ensuing glide in Lebanese in (17a), then, is explicable through a process of diphthongization, wherein the long vowel undergoes ‘fission’ and splits into two smaller elements, the short vowel and the glide.

There is variety, it appears, even in LA. Speakers of different dialects of Lebanese have different preferences when it comes to the pronunciation (or lack thereof) of the glide. A speaker of Beirut Lebanese would say *šammēt* ‘I smelled’ but *šammayto/šammayta* ‘I smelled it’, whereas a speaker from the North East would pronounce the glide in both words, i.e. *šammayt* ‘I smelled’ and *šammayto/šammayta* ‘I smelled it’. Therefore, for Beirut speakers, the epenthetic vowel can remain intact as a long vowel if it is part of a closed syllable, i.e. *šammēt*. However, when found as part of an open syllable, the long vowel diphthongizes.

The process could then be illustrated as follows:

- (20) The path of the epenthetic glide in Egyptian, Syrian and Lebanese Arabic



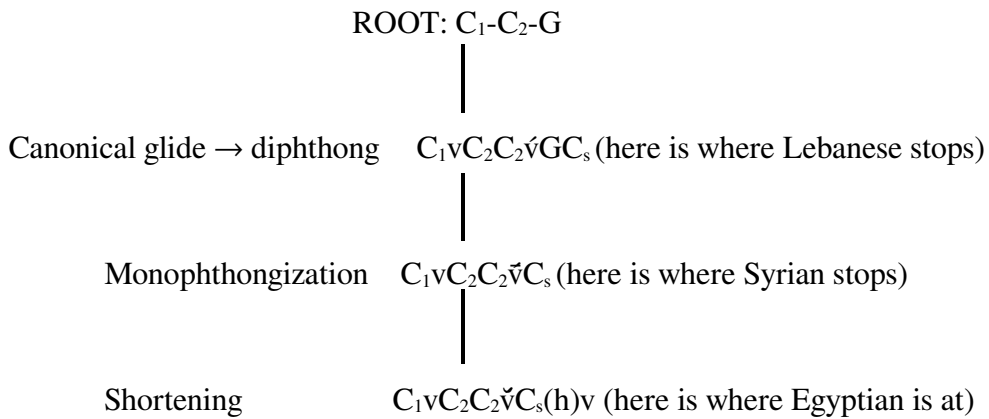
This analysis, in turn, has implications for final-weak roots. Since biconsonantal and final-weak roots may be misconstrued as having the same pattern, we must turn to the latter again using the above analysis. To properly see final-weak roots in context, consider the data in (21) for the root *s-m-G* ‘related to names’.

(21)

Lebanese	Syrian	Egyptian
1. <i>sammáyto</i> ‘I named him/it (masc.)’	<i>samméto</i>	<i>samméto</i>
2. <i>sammáyta</i> ‘I named her/it (fem.)’	<i>samméta</i>	<i>sammítha</i>

Here, the exact same process happens but in reverse order. We start off with the original glide, it then undergoes ‘fusion’, in that it forms a diphthong with the preceding vowel, monophthongizes and then shortens. Consistent with the process of epenthesis described above, the process at hand can be illustrated using the same diagram, only inverted. The inversion here means that the glide in the root and the subsequent verbs is canonical (unlike biconsonantal verbs), it forms a diphthong with the preceding vowel (in Lebanese), this diphthong monophthongizes to a long vowel (Syrian) and shortens in closed, non-final syllables (Egyptian).

(22) The path of the canonical glide of Lebanese, Syrian and Egyptian Arabic



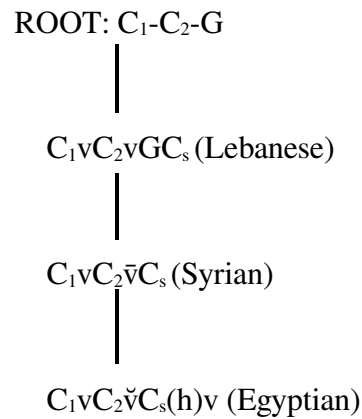
The verbal pattern, i.e. $C_1aC_2C_2aC_3$ has no bearing on the process itself, which is found even in $C_1vC_2vC_3$ patterns. Consider the root $\gamma\text{-}l\text{-}G$ ‘related to boiling’.

(23) The verb ‘to boil’ in Lebanese, Syrian and Egyptian Arabic

Lebanese	Syrian	Egyptian
1. <i>ḡaláyto</i> ‘I boiled him/it (masc.)’	<i>ḡaléto</i>	<i>ḡaléto</i>
2. <i>ḡaláyta</i> ‘I boiled her/it (fem.)’	<i>ḡaléta</i>	<i>ḡalítha</i>

The data in (23) shows that the status of C₂, whether geminated or a singleton, does not affect the outcome ultimately. The fusion and shortening processes still happen according to the scheme illustrated above and repeated for C₁vC₂vC₃ patterns:

(24) Final-weak verb with no geminate/double medial consonant



The retention of the glide and its loss are systemically determined, then, according to the dialect of Arabic spoken. This leads us to broader generalizations:

- I. Lebanese Arabic retains its glides in open syllables, and has epenthetic vowel diphthongization in open syllables.
- II. Syrian Arabic monophthongizes diphthongs formed with glides in closed syllables, and has epenthetic vowel lengthening in open syllables.
- III. Egyptian Arabic monophthongizes diphthongs formed with glides and shortens the long monophthongs in closed syllables, and has epenthetic vowels retaining their original short quality in closed syllables, and lengthening in open syllables.

8. Conclusion

This paper analyzed the phenomenon of the appearance of a glide which seems to occupy a consonantal position in the biconsonantal roots of Lebanese

Arabic. This glide was confirmed not to be a part of the biconsonantal root itself, but the manifestation of an underlying phonological necessity. The significance of this finding lies in the confirmation that the glide of biconsonantal roots is different from the glide of final-weak roots, which is the underlying third root radical in final-weak verbs. For this reason, data from LA was analyzed alongside data from Syrian and Egyptian Arabic. Verbs of biconsonantal roots in all three varieties of Arabic exhibit either an epenthetic vowel or a glide. This phenomenon was interpreted as a process of epenthesis, initially, then lengthening and diphthongization, leading to the formation of the glide ultimately. Epenthesis is a process which breaks up illicit consonant clusters of three consonants, inserting a vowel between the final and penultimate consonant. This epenthetic vowel subsequently lengthens and splits into a short vowel and a glide in LA.

This not only reveals key phonological information about LA, but also shows how biconsonantal roots are treated in the morphosyntactic paradigms of the language. Biconsonantal roots can, therefore, be categorized akin to triconsonantal and final-weak roots, which have systemic morphological patterns, i.e. binyanim.

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