

Analytic Sketches: Syrian Arabic

1. Syrian Arabic

In this section, the core phonological processes of Syrian Arabic (Damascus dialect) are investigated, focusing on the alternations which arise in the inflectional paradigm of the verb. One of the central problems which pervades the phonology is the issue of the underlying representation of vowels. It will be seen that vowels have a somewhat abstract representation, so that underlying /i,u/ frequently become [e,o], [ə] or is deleted, and often does not actually surface as [i,u].

1.1. Preliminary on morphological structure

Verb roots in Arabic are traditionally analysed as being composed of consonants only. Vowels appear on the surface due to what is known as ‘templatic morphology’, where the typical underlying stem shape is of the form CVCVC in the perfective aspect, and CCVC in the imperfective. The particular vowel used in the perfective versus the imperfective is specified lexically, so some verbs use *a* in the perfective and *o* in the imperfective (*katab* perf. -*ktob* impf. ‘write’), while others use *a* in the perfective and *e* in the imperfective (*hamal* perf. -*hmel* impf. ‘carry’), and others use *e* in the perfective and *a* in the imperfective (*ʔabel* perf. -*bal* impf. ‘be able’). The imperfective stem can be used with subject suffixes to form the imperative, or with subject prefixes and suffixes to form the imperfective subjunctive. An additional prefix *b-* is used in indicative imperfective clauses. The subject marking prefixes and suffixes are as follows.

(1)	<i>perf.</i>	<i>imperf. subjunctive</i>	<i>imperative</i>	
3m	Ø	yə-		
3f	-et	tə-		
3p	-u	yə- -u		
2m	-t	tə-	Ø	
2f	-ti	tə- -i	-i	Many descriptive works present data in augmented versions of standard orthography or transliteration. Accordingly, y is [j], dot underneath t, d, s means pharyngealized t,d,s and š, ž are ſ, ʒ
2p	-tu	tə- -u	-u	
1s	-t	ə-		
1p	-na	nə-		

The underlying vowel patterns used are the following (where the first vowel is the vowel of the perfective and the second vowel is the vowel of the imperfective): *a/u*, *a/i*, *a/a*, *i/i*, *i/a*. Often, the high vowels are phonetically realized as [e], [o] or [ə], by rules to be discussed.

1.2. Basic CVCVC verbs

We begin our investigation by looking at the phonology of verb stems which select *a* in both the perfective and the imperfective. The data in (2) are examples of verb stems which select this vowel pattern.

'ask'			'shut'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.
3m	sá?al	byés?al	yés?al	fátaḥ	byéftaḥ
3f	sá?let	btés?al	tés?al	fáthet	btéftaḥ
3p	sá?alu	byés?alu	yés?alu	fátaḥu	byéftaḥu
2m	sa?álət	btés?al	tés?al	fatáḥət	btéftaḥ
2f	sa?álti	btés?ali	tés?ali	fatáḥti	btéftaḥi
2p	sa?áltu	btés?alu	tés?alu	fatáḥtu	btéftaḥu
1s	sa?álət	bés?al	?és?al	fatáḥət	béftaḥ
1p	sa?álna	mnés?al	nés?al	fatáḥna	mnéftaḥ
imp	s?á:l, s?áli, s?álu			ftá:h, ftáhi, ftáhu	néftaḥ
	(masc sg, fem sg, pl)				

'send'			'keep'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.
3m	báñat	byébñat	yébñat	háfaz	byéhfaž
3f	báñtet	btébñat	tébñat	háfžet	btéhfaž
3p	báñatu	byébñatu	yébñatu	háfazu	byéhfažu
2m	bañátət	btébñat	tébñat	háfázət	btéhfaž
2f	bañátti	btébñati	tébñati	háfázti	btéhfaži
2p	bañáttu	btébñatu	tébñatu	háfáztu	btéhfažu
1s	bañátət	bébñat	?ébñat	háfázət	béhfaž
1p	bañátna	mnébñat	nébñat	háfázna	mnéhfaž
imp	bñá:t, bñáti, bñátu			hfa:z, hfaži, hfažu	néhfaž

We start with the perfective forms, which are the simplest. Apart from assignment of stress, the only alternation found in that tense is the deletion of the second stem vowel *a* before the 3f subject suffix *-et*, where for example /sa?al-et/ → [sa?let]. The context where this vowel is deleted – VC _ CV – is the classical context for vowel syncope, however, it must be noted that the parallel form *sa?alu* does not undergo Syncope. At this point, we will propose a rule of Syncope, and await further data before explaining exactly where the rule applies.

(3) *Syncope*
 $a \rightarrow \emptyset / VC _ Ce$

As far as stress assignment is concerned, stress in these examples is assigned either to the penultimate or antepenultimate syllable, depending on the suffix which follows. Stress generally falls on the penult in these examples, including when there is no affix, when the following affix is of the form -CV, and also before the suffix *-et*, but is on the antepenult before the 3p suffix *-u*. Further data will be required to make the principles of stress assignment clearer.

The imperfective inflection is fairly simple. There are a number of ways to state the generalization regarding stress for these forms. One generalization is that stress appears on the penultimate or antepenultimate syllables, depending on whether a vowel initial affix is added as was the case for perfective verbs; another generalization is that stress in the imperfective is word initial. Since stress is not generally word initial (cf. *sa?áltu*), we will not pursue the second observation further, but will await further data to make clear what the stress pattern is.

There is an alternation in the form of the indicative prefix *b-*, which surfaces as *m-* before the 1p imperfective prefix *nə*. This is transparently an assimilation of nasality, which can be accounted for by the following rule.

(4) *Nasalization* $b \rightarrow [+nasal] / _ [+nasal]$

Another alternation occurs with a 1s subject. In the subjunctive, the prefix surfaces as ?ə (?əs?al), but there is no glottal stop in the indicative following *b-* ($bás?al$). One analysis would be that the prefix is underlyingly /ə/ and glottal stop is inserted before an initial vowel. Or, the prefix could be /?ə/ and glottal stop deletes after a consonant. This will not work, given examples such as imperfective *btás?al* and imperative *s?á:l* where postconsonantal glottal stop survives. Therefore, we assume that the prefix is underlyingly /ə/ and posit the following rule.

(5) *Glottal Prothesis* $\emptyset \rightarrow ? / \# _ V$

The last alternation which can be seen in this paradigm are found in the imperative. In the singular imperative, where no suffix is added, the stem vowel *a* is lengthened to *aː*. This is due to a restriction on the minimum allowed size of a word: **s?al* is too short a word in Syrian Arabic, and therefore the vowel must be lengthened. The exact conditions on the minimal word will be discussed in detail as more data becomes available, but roughly, the smallest word must contain two vowels (including one long vowel), or else one vowel followed by two consonants. The following rule will account for this lengthening in the singular imperative.

(6) *Lengthening* $V \rightarrow VV / \#C_0 _ C\#$

We next turn to verbs which select *a* as the stem vowel in the perfective and /u/ in the imperfective – although it will take more analysis to justify the claim that the vowel of the imperfective is actually *u* underlyingly, since on the surface the vowel surfaces as *o* in most contexts, and at this point we could just assume that the underlying vowel is /o/.

(7)

	'write'			'command'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	kátab	byéktob	yéktob	?ámar	byé?mor	yé?mor
3f	kátbet	btéktob	téktob	?ámret	bté?mor	té?mor
3p	kátabu	byékétbu	yékétbu	?ámaru	byé?əmrū	yé?əmrū
2m	katábət	btéktob	téktob	?amárət	bté?mor	té?mor
2f	katábti	btékətbi	tékətbi	?amárti	bté?əmri	té?əmri
2p	katábtu	btékətbu	tékətbu	?amártu	bté?əmrū	té?əmrū
1s	katábət	béktob	?éktob	?amárət	bé?mor	?é?mor
1p	katábna	mnéktob	néktob	?amárna	mné?mor	né?mor
imp	któ:b, ktébi, ktébu			?mó:r, ?méri, ?móru		
	'study'			'cook'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	dáras	byédros	yédros	tábax	byéṭbox	yéṭbox
3f	dárset	btédros	tédros	tábxet	btéṭbox	téṭbox
3p	dárasu	byédərsu	yédərsu	tábaxu	byéṭəbxu	yéṭəbxu
2m	darásət	btédros	tédros	tábáxət	btéṭbox	téṭbox
2f	darásti	btédərsi	tédərsi	tábáxti	btéṭəbxi	téṭəbxi

2p	darástu	btédərsu	tédərsu	tabáxtu	btátəbxu	tétəbxu
1s	darásət	bédros	?édros	tabáxət	bé?box	?é?box
1p	darásna	mnédros	nédros	tabáxna	mnótbox	né?box
imp	dró:s, drési, drésu			tbó:x, tbéxi, tbéxu		

The perfective form of the verb stems in (7) work exactly like those in (2): the stem vowel is deleted before the suffix *-et*, and stress alternates between the penult and the antepenult.

Turning then to the imperfective forms of the verb, the stem has a different underlying phonological shape, namely CCoC (or CCuC). There is an alternation within these verbs between CCoC and CəCC, the latter appearing when a vowel initial affix follows the stem. One might posit a rather complex rule which changes the quality of the stem vowel and moves it between the first two stem consonants, but a better analysis would decompose this alternation into two simple operations. We will assume that the stem vowel is first deleted, so that underlying /byəktobu/ becomes *byəktbu*, and then exploit the fact that there are no clusters of three consecutive consonants in the language, which allows us to posit a rule of vowel epenthesis inserting schwa after the first of three consecutive consonants. Since we have not fully resolved the issue of Syncope in the perfective tense, we cannot yet determine whether the vowel deletion rule found in the imperfective data is the same rule as seen in the perfective forms. If indeed this vowel deletion were governed by the same rule, then the context could not be more specific than a following -V suffix, since the lefthand contexts where deletion takes place differ considerably, including just VC in the perfective but including VCC in the imperfective. We will therefore leave this issue unresolved temporarily, but eventually we will see that there must be two rules of vowel deletion. Epenthesis of schwa, on the other hand, poses no problems and can be accounted for by the following rule.

(8) *Epenthesis*

$$\emptyset \rightarrow \text{ə} / \text{C } \underline{\text{ }} \text{CC}$$

There is one further difference between these verbs and the verbs with /a/ in the imperfective. In the imperative, when a vowel initial suffix is added, there is no vowel lengthening, and instead the vowel *o* becomes schwa, thus /ktob-i/ → *ktábi*. Once more data is available, it will be seen that this is a reflection of the restricted distribution of the vowel *o* (also *e*) in the language, which appears only in the last syllable of a word. We will therefore tentatively assume the following rule.

(9) *Mid vowel reduction*

$$\text{e,o} \rightarrow \text{ə} / \underline{\text{ }} \text{C}_0 \text{V}$$

At this point, we turn to another class of verbs of the form CVCVC, this time verbs with the vowel *a* in the perfective and /i/ in the imperfective – on the surface, the perfective vowel is [e] alternating with schwa.

(10)	'carry'			'divide'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	ħámal	byéħmel	yéħmel	?ásam	byé?sem	yé?sem
3f	ħámlet	btéħmel	téħmel	?ásmet	bté?sem	té?sem
3p	ħámalu	byéħəmlu	yéħəmlu	?ásamu	byé?əsmu	yé?əsmu
2m	ħamálət	btéħmel	téħmel	?asámət	bté?sem	té?sem
2f	ħamálti	btéħəmlı	téħəmlı	?asámti	bté?əsmi	té?əsmi
2p	ħamáltu	btéħəmlu	téħəmlu	?asámtu	bté?əsmu	té?əsmu

1s	ħamálət	béħmel	?áħmel	?asámət	bé?sem	?é?sem
1p	ħamálna	mnéħmel	néħmel	?asámna	mné?sem	né?sem
imp	ħmé:l, ħméli, ħmélù			?sé:m, ?sémi, ?sému		
‘wash’						
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	yásal	byéysel	yéysel	kámaš	byékmeš	yékmeš
3f	yáslet	btéysel	téysel	kámšet	btékmeš	tékmeš
3p	yásalu	byéyəslu	yéyəslu	kámašu	byékəmšu	yékəmšu
2m	yásálət	btéysel	téysel	kamášət	btékmeš	tékmeš
2f	yásálti	btéyəslı	téyəslı	kamášti	btékəmši	tékəmši
2p	yásáltu	btéyəslu	téyəslu	kamáštu	btékəmšu	tékəmšu
1s	yásálət	béysel	?éysel	kamášət	békmeš	?ékmeš
1p	yásálna	mnéysel	néysel	kamášna	mnékmeš	nékmeš
imp	ysé:l, yséli, ysélu			kmé:š, kméši, kméšu		
‘grasp’						

This set of verbs is essentially identical to the previous set, and differs only in that the vowel in the imperfective is [e] and not [o]; otherwise, the data are the same.

We now come to a fourth group of verbs, which select underlying /i/ in both the perfective and imperfective – again, we could also assume at this point that the vowel is underlying /e/. The imperfective is identical to the immediately preceding set, so requires no additional comment. The vocalic pattern of the verb in the perfective, on the other hand, is more complex.

(11)	‘descend’		‘hold’			
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	nézel	byónzel	yéñzel	mések	byémsek	yémsek
3f	nézlet	btónzel	téñzel	móskeř	btómsek	tómsek
3p	nézlu	byénəzlu	yéñəzlu	mósku	byéməsku	yéməsku
2m	nzélət	btónzel	téñzel	msékət	btómsek	tómsek
2f	nzéltu	btónəzli	téñəzli	mséktu	btóməski	tóməski
2p	nzélti	btónəzlu	téñəzlu	msékti	btóməsku	tóməsku
1s	nzélət	béñzel	?éñzel	msékət	béómsek	?éómsek
1p	nzélna	mnéñzel	néñzel	msékna	mnómsek	nómsek
imp	nzé:l, nzéli, nzélu			msé:k, mséki, mséku		
	‘dress’		‘be able’			
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	lábes	byélbes	yélbəs	?áder	byé?der	yé?der
3f	lábset	btélbəs	télbəs	?ádret	bté?der	té?der
3p	lábsu	byéləbsu	yélbəsu	?ádrū	byé?ədrū	yé?ədrū
2m	lbásət	btélbəs	télbəs	?dárət	bté?der	té?der
2f	lbástu	btélbəsi	télbəsi	?dárta	bté?ədri	té?ədri
2p	lbásiti	btélbəsu	télbəsu	?dárta	bté?ədrū	té?ədrū
1s	lbásət	bélbəs	?élbəs	?dárət	bé?der	?é?der
1p	lbásna	mnélbəs	nélbəs	?dárna	mné?der	né?der
imp	lbé:s, lbési, lbésu			?dé:r, ?dári, ?dáru		

Let us compare the perfective forms of /katab/ ‘write’ with /nizil/ ‘descend’ to see where the differences lie.

(12)	3m	nézel	kátab
	3f	nézlet	kátbet
	3p	nézlu	kátabu
	2m	nzélət	katábət
	2f	nzéltu	katábti
	2p	nzélti	katábtu
	1s	nzélət	katábət
	1p	nzélna	katábna

In the case of stems with /a/ in the perfective, it is obvious that the stem has the underlying shape CaCaC, since there is only one context where the stem is different. For stems such as ‘descend’, it is not so obvious what the underlying stem is, since the stem varies on the surface between CəCeC, CəCC and CCəC. We will begin with the alternation in the final vowel between *e* and *ə*, since that is the most straightforward. It has been observed above that *e* (and *o*) only appears in the final syllable of a word, and that there is a rule reducing the mid vowels to schwa in a nonfinal syllable. Application of this rule accounts for the second stem syllable in examples such as *nzéltu* from *názéltu* where *e* appears as schwa.

Now we consider the issue of the V ~ Ø alternation. Both of the stem vowels are subject to deletion in some context, cf. *názel* ~ *názlu*, and *názel* ~ *nzéltu*. Let us assume that both vowels are underlyingly present, and are subject to deletion in some context. Therefore, prior to deletion of the vowel, the perfective forms of ‘descend’ would be as follows.

(13)	3m	nézel	3f	nézəl-et
	3p	nézel-u	2m	nézəl-ət
	2f	nézəl-tu	2p	nézəl-əti
	1s	nézəl-ət	1p	nézəl-na

The generalization regarding retention of the vowel schwa is now clear: it is deleted if it is unstressed and in an open syllable, otherwise it is retained. At this point we have no clear evidence whether the vowel that is deleted has the quality *e* or *ə*, and we will formalize our rule generally so that it would not matter what the underlying vowel quality is.

(14) *Nonlow vowel deletion*

$$\begin{array}{c} \text{V} \\ [-\text{stress}] \\ [-\text{low}] \end{array} \rightarrow \emptyset / _ \text{CV}$$

These data help to clarify an aspect of the phonology of imperfective verbs noted above. It was observed, in discussing stems such as *katab* ~ *ktob*, that there is a V ~ Ø alternation in the perfective; at that point it was not clear whether that alternation was due to the same rule as the one which accounts for /katabet/ → *katbet*. We can now see that these must be due to separate rules. Clearly, the deletion of unstressed nonlow vowels in open syllables cannot be generalized to include low vowels, as shown by the many forms where unstressed /a/ does not delete in an open syllable, such as 3p perfective *sá?alu*, imperfective *byás?alu*, 2m perfective *sa?álət*. We may now conclude that the Ø alternant in the imperfective is in

fact due to this rule specifically targetting nonlow vowels, and not some generalized syncope rule affecting all vowels.

Now we have a rule which accounts for the $V \sim \emptyset$ alternation of stems like *nəzel*, and a rule which accounts for the $e \sim a$ alternation. The two most obvious choices regarding the underlying form of the stem are *nəzel* and *nezel* (another possibility is /nizil/, but at this point there is little reason to assume that underlying form). The advantage to assuming /nəzel/ is that it is fairly non-abstract: the underlying vowel is actually attested in some surface form. On the other hand, assuming /nezel/ allows us to express another generalization regarding vowels: within a stem type, there is only a single underlying vowel. Further data may clarify whether either of these assumptions has an empirical advantage.

Since we understand the vocalic alternations in perfective stems with /e/, we can present examples of stems with *e* in the perfective and *a* in the imperfective, which is the last class of vocalic patterns.

(15)	'accept'			'understand'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	?ébel	byé?bal	yé?bal	féhem	byéfham	yéfham
3f	?éblet	bté?bal	té?bal	féhmet	btéfham	téfham
3p	?éblu	byé?balu	yé?balu	féhmu	byéfhamu	yéfhamu
2m	?bélət	bté?bal	té?bal	fhómət	btéfham	téfham
2f	?bélti	bté?bali	té?bali	fhóm̩ti	btéfhami	téfhami
2p	?béltu	bté?balu	té?balu	fhóm̩tu	btéfhamu	téfhamu
1s	?bélət	bé?bal	?é?bal	fhóm̩ət	béfham	?éfham
1p	?bélna	mné?bal	né?bal	fhómna	mnéfham	néfham
imp	?bá:l, ?báli, ?bálu			fhá:m, fhámi, fhámu		

The phonology of these stems is totally predictable at this point: the perfective works like /nizil/ so both vowels are subject to deletion, and the imperfective works like /sa?al/, so the stem vowel is not deleted.

1.3. Glide Initial CVCVC stems

In the data considered in the previous section, the nature of the root consonants did not make any difference to the phonology of the verb. However, stems with glides act different from other kinds of stems. In this section we concentrate on stems whose initial consonant is a glide, primarily /w/, since those stems have a different phonological pattern.

We will begin with verbs with *a* in both tenses; examples are given in (16).

(16)	'place'			'entrust'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	wáda?	byú:da?	yú:da?	wáda?	byú:da?	yú:da?
3f	wád?et	btú:da?	tú:da?	wád?et	btú:da?	tú:da?
3p	wáda?u	byú:da?u	yú:da?u	wáda?u	byú:da?u	yú:da?u
2m	wadá?ət	btú:da?	tú:da?	wadá?ət	btú:da?	tú:da?
2f	wadá?ti	btú:da?i	tú:da?i	wadá?ti	btú:da?i	tú:da?i
2p	wadá?tu	btú:da?u	tú:da?u	wadá?tu	btú:da?u	tú:da?u
1s	wadá?ət	bú:da?	?ú:da?	wadá?ət	bú:da?	?ú:da?
1p	wadá?na	mnú:da?	nú:da?	wadá?na	mnú:da?	nú:da?
imp	wda?:, wda?i, wda?u			wda?:, wda?i, wda?u		

The perfective inflection poses no problem. However, the imperfective of a w-initial root differs radically from the phonology of a root beginning with another consonant. Parallel examples from the subjunctive are given in (17).

(17)	'place'	'ask'
3m	y-ú:ða᷑	yé-s?al
3f	t-ú:ða᷑	té-s?al
3p	y-ú:ða᷑u	yé-s?alu
2m	t-ú:ða᷑	té-s?al
2f	t-ú:ða᷑i	té-s?ali
2p	t-ú:ða᷑u	té-s?alu
1s	?-ú:ða᷑	?é-s?al
1p	n-ú:ða᷑	né-s?al

Parallel to 'ask', we would have expected forms such as the following.

(18)	3m	*yéwða᷑	3f	*téwða᷑
	3p	*yéwða᷑u	2m	*téwða᷑
	2f	*téwða᷑i	2p	*téwða᷑u
	1s	*?éwða᷑	1p	*nówða᷑

The actual surface forms are accounted for by a glide-vocalization rule.

- (19) *Glide Vocalization*
 $\emptyset \rightarrow w C \rightarrow u: C$

Given this simple rule, we can now consider other vowel patterns among verb roots beginning with a glide. A number of such verbs have *a* in the perfective and *e* (/i/) in the imperfective.

(20)	'describe'		'promise'			
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	wáṣaf	byú:ṣef	yú:ṣef	wáṣad	byú:ṣed	yú:ṣed
3f	wáṣfet	btú:ṣef	tú:ṣef	wáṣdet	btú:ṣed	tú:ṣed
3p	wáṣafu	byú:ṣfu	yú:ṣfu	wáṣadu	byú:ṣdu	yú:ṣdu
2m	waṣáfət	btú:ṣef	tú:ṣef	waṣádət	btú:ṣed	tú:ṣed
2f	waṣáfti	btú:ṣfi	tú:ṣfi	waṣád̩ti	btú:ṣdi	tú:ṣdi
2p	waṣáftu	btú:ṣfu	tú:ṣfu	waṣád̩tu	btú:ṣdu	tú:ṣdu
1s	waṣáfət	bú:ṣef	?ú:ṣef	waṣádət	bú:ṣed	?ú:ṣed
1p	waṣáfna	mnú:ṣef	nú:ṣef	waṣád̩na	mnú:ṣed	nú:ṣed
imp	wṣé:f, wṣéfi, wṣéfu			wṣé:d, wṣédi, wṣédu		

Apart from the vocalization of root initial *w* with *ə*, these verbs behave just like roots such as *ḥamal*. Similarly, stems with initial *w* may have the vocalic pattern *e* in the perfective ~ *a* in the imperfective, and such verbs behave exactly like their counterparts with a non-glide in initial position (e.g. deletion the vowel /i/ in an unstressed open syllable).

		'fall'			'arrive'		
		perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	wé?eñ	byú: ?añ	yú: ?añ	wéšel	byú: šal	yú: šal	
3f	wé?ñet	btú: ?añ	tú: ?añ	wéšlet	btú: šal	tú: šal	
3p	wé?ñu	byú: ?añu	yú: ?añu	wéšlu	byú: šalu	yú: šalu	
2m	wééñet	btú: ?añ	tú: ?añ	wéšlet	btú: šal	tú: šal	
2f	wééñti	btú: ?añi	tú: ?añi	wéšleti	btú: šali	tú: šali	
2p	wééñtu	btú: ?añu	tú: ?añu	wéšltu	btú: šalu	tú: šalu	
1s	wééñet	bú: ?añ	?ú: ?añ	wéšlet	bú: šal	?ú: šal	
1p	wééñna	mnú: ?añ	nú: ?añ	wéšlna	mnú: šal	nú: šal	
imp	wéá:, wéáñi, wéáñu			wéšl	wsá:l, wsáli, wsálu		

One stem begins with the glide *y*, which selects this same vowel pattern. As the following paradigm shows, the glide *y* vocalizes to long *i*:

		'dry up'		
		perf.	impf. ind.	impf. sbj
3m	yébes	byí:bas	yí:bas	
3f	yébset	btí:bas	tí:bas	
3p	yébsu	byí:basu	yí:basu	
2m	ybésøt	btí:bas	tí:bas	
2f	ybéstí	btí:basi	tí:basi	
2p	ybéstu	btí:basu	tí:basu	
1s	ybésøt	bí:bas	?í:bas	
1p	ybésna	mní:bas	ní:bas	
imp	ybá:s, ybási, ybásu			

This can be explained by a simple generalization of Glide Vocalization to include all glides.

1.4. CV:C Stems

Not all stems are of the surface shape CVCVC, and in this section we consider the phonology of stems with the shape CV:C, whose phonology differs considerably from that of CVCVC stems. We begin with stems which select the vocalism *a* in both the perfective and imperfective in (23).

		'sleep'			'appear'		
		perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	ná:m	biná:m	yná:m	bá:n	bibá:n	ybá:n	
3f	ná:met	bətná:m	tná:m	bá:net	bətbá:n	tbá:n	
3p	ná:mu	biná:mu	yná:mu	bá:nu	bibá:nu	ybá:nu	
2m	némøt	bətná:m	tná:m	bénøt	bətbá:n	tbá:n	
2f	némtí	bətná:mi	tná:mi	bénti	bətbá:ni	tbá:ni	
2p	némøtu	bətná:mu	tná:mu	béntu	bətbá:nu	tbá:nu	
1s	némøt	bná:m	ná:m	bénøt	bbá:n	bá:n	
1p	némøna	mənná:m	nná:m	bénna	mənbá:n	nbá:n	
imp	ná:m, ná:mi, ná:mu			bá:n, bá:ni, bá:nu			

	'fear'			'contain'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	xá:f	bixá:f	yxá:f	sá:ʃ	bisá:ʃ	ysá:ʃ
3f	xá:fet	bətxá:f	txá:f	sá:ʃet	bətsá:ʃ	tsá:ʃ
3p	xá:fu	bixá:fu	yxá:fu	sá:ʃu	bisá:ʃu	ysá:ʃu
2m	xéfət	bətxá:f	txá:f	séfət	bətsá:ʃ	tsá:ʃ
2f	xéfti	bətxá:fi	txá:fi	séfəti	bətsá:ʃi	tsá:ʃi
2p	xéftu	bətxá:fu	txá:fu	séfətu	bətsá:ʃu	tsá:ʃu
1s	xéfət	bxá:f	xá:f	séfət	bsá:ʃ	sá:ʃ
1p	xéfna	mənxá:f	nxá:f	séfna	mənsá:ʃ	nsá:ʃ
imp	xá:f, xá:fi, xá:fu			sá:ʃ, sá:ʃi, sá:ʃu		

We will first take on the perfective conjugation. The alternation that needs to be accounted for in this tense is between Ca:C and CəC. Stems of the shape Ca:C appear either when there is no suffix, or before the suffixes *-u* and *-et*, and stems of the shape CəC are found before suffixes of the shape CV and əC. This distribution can be regularized by modifying our assumption about the underlying form of the suffixes for 2m and 1s which seem to be /ət/. It was previously noted that there are no clusters of three consonants in the language and that such clusters, when created, are broken up by insertion of the vowel schwa. There are also no clusters of the form CC at the end of a word (except identical consonant clusters). This fact raises the possibility that these suffixes are really /t/, and that the vowel is epenthetic. If that is the case, then the distribution of the two stem variants, Ca:C and CəC can be stated simply as: Ca:C becomes CəC before a consonant-initial suffix. This allows us to posit the following rule.

(24) *Pre-cluster shortening*

V: → ə / ____ CC

Furthermore, assuming that the 2m and 1s suffixes are really /t/ and that their vowel is epenthetic now allows us to make more sense of the stress pattern of the language. Pursuing that assumption, examples of stress in the perfective and imperfective tenses of 'ask' are given, without the epenthetic vowel.

(25)	3m	sá?al	b-yé-s?al
	3f	sá?l-et	b-té-s?al
	3p	sá?al-u	b-yé-s?al-u
	2m	sa?ál-t	b-té-s?al
	2f	sa?ál-ti	b-té-s?al-i
	2p	sa?ál-tu	b-té-s?al-u
	1s	sa?ál-t	b-é-s?al
	1p	sa?ál-na	m-né-s?al

From this, we can see that stress falls on the final vowel if it is followed by two consonants, otherwise on the penult if that vowel is followed by two consonants, and on the antepenult if neither of the following vowels are followed by two consonants. In order to be consistent with the theory of stress assignment, and because additional data will be better accounted for if we do so, we restate the generalization not directly in terms of counting consonants, but rather in terms of an abstract property of syllables, namely we will distinguish between light and heavy syllables. In Syrian Arabic, heavy syllables are ones containing a long vowel, or a short vowel plus a consonant, except that at the end of a word, a single final consonant does not suffice to make a syllable heavy, but two consonants do. Stated in those terms, the generalization regarding stress is that the rightmost heavy syllable is stressed. In the following rule, σ indicates 'syllable' and σ̄ indicates 'light syllable': this rule allows up to two light syllables to be skipped over in placing stress.

- (26) *Stress assignment*
 $\sigma \rightarrow \overset{\circ}{\sigma} / _ ((\overset{\circ}{\sigma})\overset{\circ}{\sigma}) \#$

At this point, we can turn to the conjugation of CV:C verbs in the imperfective subjunctive. We see in (27) that while there is no alternation in the shape of the stem in the imperfective, there is variation in the shape of the prefix, compared to CVCVC verbs.

	'fear'	'ask'
3m	y-xá:f	yé-s?al
3f	t-xá:f	té-s?al
3p	y-xá:fu	yé-s?alu
2m	t-xá:f	té-s?al
2f	t-xá:fi	té-s?ali
2p	t-xá:fu	té-s?alu
1s	xá:f	?é-s?al
1p	n-xá:f	né-s?al

The explanatory basis for most of this alternation is already available. Following the rule for stress assignment which we have proposed, we would expect to find forms, after stress is assigned, such as /yə-xá:f/, /yə-xá:f-u/. Stress is assigned to the stem vowel because it is long, in contrast to that of yés?al. These forms contain unstressed schwa in a closed syllable, which we have seen is subject to deletion. Given application of the schwa deletion rule, all forms of the imperfective subjunctive are accounted for, save for the 1s form.

As for the 1s imperfective form, recall that that prefix was assumed to be /ə/. Beginning with the underlying form /ə-xa:f/, stress assignment gives əxá:f, then schwa deletion gives the phonetic form xá:f. This then completes the analysis of the imperfective subjunctive, so we turn to the indicative, to see the effect of adding the prefix *b*-.

Representative examples of indicative and subjunctive CV:C stems and indicative CVCVC stems are contrasted in (28).

	fear (subjunct)	fear (indic)	ask (indic)
3m	y-xá:f	b-i-xá:f	b-yé-s?al
3f	t-xá:f	bə-t-xá:f	b-té-s?al
3p	y-xá:fu	b-i-xá:fu	b-yé-s?alu
2m	t-xá:f	bə-t-xá:f	b-té-s?al
2f	t-xá:fi	bə-t-xá:fi	b-té-s?ali
2p	t-xá:fu	bə-t-xá:fu	b-té-s?alu
1s	xá:f	b-xá:f	b-é-s?al
1p	n-xá:f	mə-n-xá:f	m-né-s?al

Simply adding the indicative prefix to the subjunctive form *txa:f* would yield *btxá:f*, with a cluster of three consonants: the surface form derives by applying epenthesis. On the other hand, in the 1s form no such consonant cluster arises, and therefore no vowel is inserted. It should also be noted, given the surface form *mənxá:f* from /b-nə-xá:f/, that the rule of *b*-nasalization must apply before epenthesis, since the latter rule separates *b* and the triggering nasal consonant.

Another set of forms to be concerned with in the indicative paradigm of CV:C verbs is *bixá:f*, *bixá:fu*. From the underlying forms /b-yə-xá:f/, /b-yə-xá:f-u/ we would expect to derive *bəyxá:f(u)*, considering only stress assignment, ə-deletion, and epenthesis. In addition, however, we have the rule of glide vocalization which should apply to these forms giving *bi:xá:f(u)*. This is almost the correct output, except for

vowel length. At this point it is not clear whether the shortening of the first vowel is due to it standing before another long vowel, or is due to being unstressed. We will assume the latter explanation, and will seek further evidence for that choice below.

(29) *Unstressed shortening*

$$\begin{array}{c} V \\ [-\text{stress}] \rightarrow [-\text{long}] \end{array}$$

Finally, it should be noted that in the imperative, the stem vowel is long in the singular masculine where no affix added, and in the feminine and plural forms where a -V suffix is added. This contrasts with stems such as *któ:b* ~ *ktábi*: the difference is that in *któ:b* vowel length is assigned to satisfy the word minimality requirement but in *xá:f* ~ *xá:fi* the stem has an underlying long vowel. This then complete the analysis of CV:C stems having the vocalic pattern *a* ~ *a*.

In (30) are given examples of CV:C verbs with the vocalic pattern *a* for the perfective, *u* for the imperfective.

(30) ‘drive’

		perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	sá:?	bisú:?	ysú:?	?á:l	bi?ú:l	y?ú:l	
3f	sá:?et	bətsú:?	tsú:?	?á:let	bət?ú:l	t?ú:l	
3p	sá:?u	bisú:?u	ysú:?u	?á:lu	bi?ú:lu	y?ú:lu	
2m	sé:?et	bətsú:?	tsú:?	?élet	bət?ú:l	t?ú:l	
2f	sé:?ti	bətsú:?	tsú:?i	?élti	bət?ú:li	t?ú:li	
2p	sé:?tu	bətsú:?	tsú:?u	?éltu	bət?ú:lu	t?ú:lu	
1s	sé:?et	bsú:?	sú:?	?élet	b?ú:l	?ú:l	
1p	sé?na	mənsú:?	nsú:?	?élna	mən?ú:l	n?ú:l	
imp	sú:?, sú:?i, sú:?u			?ú:l, ?ú:li, ?ú:lu			

‘visit’

		perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	zá:r	bizú:r	yzú:r	lá:m	bilú:m	ylú:m	
3f	zá:ret	bətzú:r	tzú:r	lá:met	bətlú:m	tlú:m	
3p	zá:ru	bizú:ru	yzú:ru	lá:mu	bilú:mu	ylú:mu	
2m	zé:rət	bətzú:r	tzú:r	lé:mət	bətlú:m	tlú:m	
2f	zér̩ti	bətzú:ri	tzú:ri	lémti	bətlú:mi	tlú:mi	
2p	zér̩tu	bətzú:ru	tzú:ru	lémtu	bətlú:mu	tlú:mu	
1s	zér̩ət	bzú:r	zú:r	lémət	blú:m	lú:m	
1p	zér̩na	mənzú:r	nzú:r	lémnə	mənlú:m	nlú:m	
imp	zú:r, zú:ri, zú:ru			lú:m, lú:mi, lú:mu			

‘blame’

The importance of this set of verbs is the realization of the imperfective vowel. Previous verbs have presented [a], [o] and [e], and never *[u], *[i] as the vowel of the imperfective. With CV:C verbs, we find the long vowels [a:], [u:] and (below) [i:], never *[o], *[e]. This complementarity suggests that the tense-related vocalism reduces to a single, simpler system with just three vowels – /a,u,i/ – and derive mid vowel by a rule which is sensitive to vowel length.

(31) *Vowel Lowering*

$$\begin{array}{c} V \\ [-\text{long}] \rightarrow [-\text{hi}] \end{array}$$

This predicts that there should be no short vowels [i], [u] in the language, which is wrong: cf. *bixá:f* ‘he fears’. This high vowel derives from a long vowel by unstressed vowel shortening, so this is not a serious counterexample. More problematic is that the suffixes *-u*, *-tu*, *-i*, *-ti* do not undergo lowering. There are three explanations for this. First, the suffixes might have underlying long vowels (shortened because they are unstressed), so escape lowering. The difficulty with this account is that it becomes hard to explain why these vowels are not stressed, when stress otherwise seeks the last heavy syllable. The second alternative is that lowering is morphologically restricted so that it does not affect suffixes. A third possibility is that reduction does not affect word-final vowels. Lacking evidence to choose between alternatives, we do not make a specific decision at this point.

The data in (32) provides examples of CV:C stems selecting the vocalic pattern *a ~ i*, to complement the preceding data on the pattern *a ~ u*.

(32)	'wake up'			'be absent'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	fá:?	bífi:?	yfí:?	gá:b	bíyí:b	yyí:b
3f	fá:?et	bétfí:?	tífí:?	gá:bet	bétyí:b	tyí:b
3p	fá:?u	bífi:?u	yfí:?u	gá:bu	bíyí:bu	yyí:bu
2m	fá?et	bétfí:?	tífí:?	gébét	bétyí:b	tyí:b
2f	fá?ti	bétfí:?i	tífí:?i	gébtí	bétyí:bi	tyí:bi
2p	fá?tu	bétfí:?u	tífí:?u	gébtu	bétyí:bu	tyí:bu
1s	fá?et	bífi:?	fi:?	gébét	byí:b	yí:b
1p	fá?na	ménfí:?	nífí:?	gébna	ményí:b	nyí:b
imp	fi:?, fi:?i, fi:?u			yí:b, yí:bi, yí:bu		
'remove'			'live'			
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
	?á:m	bí?í:m	y?í:m	?á:š	bí?í:š	y?í:š
3m	?á:met	bé?í:m	t?í:m	?á:šet	bé?í:š	t?í:š
3f	?á:mu	bí?í:mu	y?í:mu	?á:šu	bí?í:šu	y?í:šu
2m	?émét	bé?í:m	t?í:m	?éšét	bé?í:š	t?í:š
2f	?émtí	bé?í:mi	t?í:mi	?éšti	bé?í:ši	t?í:ši
2p	?émtu	bé?í:mu	t?í:mu	?éštu	bé?í:šu	t?í:šu
1s	?émét	b?í:m	?í:m	?éšét	b?í:š	?í:š
1p	?émna	mén?í:m	n?í:m	?éšna	mén?í:š	n?í:š
imp	?í:m, ?í:mi, ?í:mu			?í:š, ?í:ši, ?í:šu		

This then completes the analysis of CV:C verb stems.

1.5. CVCCVC stems

Another class of stems has the shape CVCCVC. The examples in (33) have the vowel *a* in the perfective and *i* in the imperfective.

(33)	'close'			'try'		
	perf.	impf. ind.	perf.	impf. ind.	impf. sbj	
3m	sákkar	bisákker	tsákker	žárrab	bižárreb	tžárreb
3f	sákkaret	bøtsákker	tsákker	žárrabet	bøtžárreb	tžárreb
3p	sákkaru	bisákkru	ysákkru	žárrabu	bižárrbu	yžárrbu
2m	sakkárøt	bøtsákker	tsákker	žarrábøt	bøtžárreb	tžárreb
2f	sakkárti	bøtsákkri	tsákkri	žarrábti	bøtžárrbi	tžárrbi
2p	sakkártu	bøtsákkru	tsákkru	žarrábtu	bøtžárrbu	tžárrbu
1s	sakkárøt	bsákker	sákker	žarrábøt	bžárreb	žárreb
1p	sakkárna	mønsákker	nsákker	žarrábna	mønžárreb	nžárreb
imp	sákker	sákkri	sákkru	žárreb, žárrbi, žárrbu		

This paradigm reinforces aspects of our analysis of vowel deletion. We saw two patterns of vowel deletion, one via an apocope rule deleting unstressed non-low vowels in an open syllable, and one via a syncope rule deleting unstressed *a* in an open syllable, when the vowel is preceded by VC. Underlying /sakkaret/ cannot undergo syncope of /a/ because the vowel is preceded by a consonant cluster; but, /yø-sakkir-u/ undergoes apocope of *i* despite the preceding consonant cluster.

1.6. CVCV Stems

Our next class of verb stems are those of the shape CVCV. Consideration of these stems will lead us to posit a new rule. We will start with verbs having *a* in all tenses: examples are given in (34).

(34)	'read'			'begin'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	?ára	byé?ra	yé?ra	báda	byébda	yébda
3f	?áret	bté?ra	té?ra	bádet	btébda	tébda
3p	?áru	byé?ru	yé?ru	bádu	byébdu	yébdu
2m	?aré:t	bté?ra	té?ra	badé:t	btébda	tébda
2f	?aré:ti	bté?ri	té?ri	badé:ti	btébdi	tébdi
2p	?aré:tu	bté?ru	té?ru	badé:tu	btébdu	tébdu
1s	?aré:t	bé?ra	?é?ra	badé:t	bébda	?ébda
1p	?aré:na	mné?ra	né?ra	badé:na	mnébda	nébda
imp	?ra:, ?ri:, ?ru:			bda:, bdi:, bdu:		

	'disobey'			'grow'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	?ásha	byéñsha	yéñsha	náma	byénma	yénma
3f	?áset	btéñsha	téñsha	námet	bténma	ténma
3p	?ášu	byéñšu	yéñšu	námu	byénmu	yénmu
2m	?asé:t	btéñsha	téñsha	namé:t	bténma	ténma
2f	?asé:ti	btéñsi	téñsi	namé:ti	bténmi	ténmi
2p	?asé:tu	btéñšu	téñšu	namé:tu	bténmu	ténmu
1s	?asé:t	béñsha	?éñsha	namé:t	bónma	?ónma
1p	?asé:na	mnéñsha	néñsha	namé:na	mnónma	nónma
imp	?şa:, ?şı:, ?şu:			nma:, nmi:, nmu:		

In the perfective tense, we encounter a number of alternations at the juncture of the stem final vowel *a* and a following suffix. On the one hand, if the following suffix begins with a vowel, the stem vowel *a* is

deleted; thus underlying *?ara-et* and *?ara-u* surface as *?ar-et* and *?ar-u*, due to the following rule. We note that there are no clusters of vowels in any of our data for this language.

(35) *Vowel cluster simplification*

$$V \rightarrow \emptyset / _ V$$

On the other hand, when the stem is followed by a consonant-initial suffix, the final stem vowel becomes [e:]. We will tentatively formalize this rule as in (36), but will re-analyze this process when additional data is available.

(36) *a → e: / _ + C*

Note that the 2m and 1s suffixes, which appear as *-ət* when added to a consonant final stem, pattern with other consonant initial suffixes in triggering this rule. We have seen other evidence supporting the claim that the schwa in these suffixes is epenthetic, since these suffixes pattern with other consonant initial suffixes with respect to stress assignment and the shortening of stem vowels in CV:C verbs.

The derivation of imperfective forms does not pose any particular challenge, given that we have motivated a rule deleting a stem vowel before a suffix vowel. Surface [byé?ra] derives from /b-yə-?ra/ by stress assignment, and /b-yə-?ra-u/ becomes [byé?ru] by vowel cluster reduction and stress. The imperative forms *?rá:*, *?rí:*, *?rú:* merit a brief comment. These derive from /?ra/, /?ra-i/, /?ra-u/. Vowel cluster reduction and stress apply to give *?rá*, *?rí*, *?rú*, and lengthening the of vowel in subminimal words then accounts for the long vowel in these forms.

The next set of stems that we will consider are those with *a* in the perfective and *i* in the imperfective, examples being given in (37).

	'build'			'invoke'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	bána	byébni	yébni	dáñ'a	byéðñi	yéðñi
3f	bán̄et	btébni	tébni	dáñet	btéðñi	téðñi
3p	bánu	byébnu	yébnu	dáñu	byéðñu	yéðñu
2m	bané:t	btébni	tébni	dañé:t	btéðñi	téðñi
2f	bané:ti	btébni	tébni	dañé:ti	btéðñi	téðñi
2p	bané:tu	btébnu	tébnu	dañé:tu	btéðñu	téðñu
1s	bané:t	bébni	?ébni	dañé:t	béðñi	?éðñi
1p	bané:na	mnébni	nébni	dañé:na	mnéðñi	néðñi
imp	bní:, bní:, bnú:			dñí:, dñí:, dñú:		
'extinguish'						
	'extinguish'			'speak'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	ṭáfa	byéṭfi	yéṭfi	ḥáka	byéḥki	yéḥki
3f	ṭáf̄et	btéṭfi	téṭfi	ḥáket	btéḥki	téḥki
3p	ṭáfu	byéṭfu	yéṭfu	ḥáku	byéḥku	yéḥku
2m	ṭafé:t	btéṭfi	téṭfi	ḥaké:t	btéḥki	téḥki
2f	ṭafé:ti	btéṭfi	téṭfi	ḥaké:ti	btéḥki	téḥki
2p	ṭafé:tu	btéṭfu	téṭfu	ḥaké:tu	btéḥku	téḥku
1s	ṭafé:t	béṭfi	?éṭfi	ḥaké:t	béḥki	?éḥki
1p	ṭafé:na	mnéṭfi	néṭfi	ḥaké:na	mnéḥki	néḥki
imp	ṭfi:, ṭfi:, ṭfu:			ḥki:, ḥki:, ḥkú:		

The perfectives are parallel to the perfectives of *?ara* etc. so they require no comment. The imperfectives derive simply, given the rule of vowel cluster reduction and the underlying vowel which they select in the imperfective. Underlying /tə-bni/ surfaces as [təbni] ‘she built’, and /tə-bni-i/ surfaces as homophonous [təbni] ‘you f. built’ (cf. /tə-?ra/ → [tə?ra] ‘she read’, /tə-?ra-i/ → [tə?ri] ‘you f. read’).

A third class of vowel final verbs select the vowel *i* in the perfective and *a* in the imperfective.

		'stay'		'get stuck'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	bé?i	byéb?a	yéb?a	šéfi	byéšfa	yéšfa
3f	bé?yet	btéb?a	téb?a	šáfyet	btéšfa	téšfa
3p	bé?yu	byéb?u	yéb?u	šáfyu	byéšfu	yéšfu
2m	b?í:t	btéb?a	téb?a	šfi:t	btéšfa	téšfa
2f	b?í:ti	btéb?i	téb?i	šfi:ti	btéšfi	téšfi
2p	b?í:tu	btéb?u	téb?u	šfi:tu	btéšfu	téšfu
1s	b?í:t	béb?a	?éb?a	šfi:t	béšfa	?éšfa
1p	b?í:na	mnéb?a	néb?a	šfi:na	mnéšfa	néšfa
imp	b?á:, b?í:, b?ú:			šfá:, šfi:, šfú:		

The inflection of the imperfective of these verbs is exactly identical to that of *a ~ a* verbs like *?ára*. The perfective on the other hand requires some analysis. We can see that before a vowel-initial suffix in the perfective, the final vowel becomes the glide *y*. Thus, /bə?i-et/ becomes [bé?yet] and /bə?i-u/ becomes [bé?yu]. Obviously, a rule of glide formation is at work in these data. However, we must ask why no glide formation was found in apparently parallel forms such as /tə-bni-u/ → [təbnu] ‘you pl. built’. The answer is that the forms are not entirely parallel, and the crucial difference is the number of consonants appearing before the stem final vowel. In the case of /bə?i-et/, Glide Formation can apply without creating an illicit sequence of three consonants, so [bé?yet] results. In /tə-bni-u/ on the other hand, were Glide Formation to apply, illicit *[təbnyu] with a CCC sequence would result. Therefore, we must constrain Glide Formation so that its application does not result in three consonants.

(39) *Glide Formation*

$$\begin{array}{c} V \\ [+hi] \rightarrow [-\text{syllabic}] / V C _ V \end{array}$$

A final set of CVCV verbs will be considered here, namely those whose initial consonant is a glide. We have previously seen that initial glides are subject to a vocalization process in imperfective forms, and CVCV verbs are subject to such a process. The verb in (40) illustrates the conjugation of a verbs with the vowel pattern *i ~ a*.

		'be low'	
	perf.	impf. ind.	impf. sbj
3m	wéti	byú:ta	yú:ta
3f	wétyet	btú:ta	tú:ta
3p	wétyu	byú:tu	yú:tu
2m	wtí:t	btú:ta	tú:ta
2f	wtí:ti	btú:ti	tú:ti
2p	wtí:tu	btú:ta	tú:ta
1s	wtí:t	bú:ta	?ú:ta
1p	wtí:na	mnú:ta	nú:ta
imp	wtá:, wtí:, wtú:		

Glide vocalization applies as expected in the imperfective. Underlying /b-*yə-wtə-i/ undergoes stress assignment and vowel cluster reduction to give intermediate *byyw̫ti*, which then undergoes glide vocalization to give surface [byu:t̪i]*

The examples in (41) involve a verb with *a* in the perfective and *i* in the imperfective.

	perf.	impf. ind.	impf. sbj
3m	wáfa	byú:fi	yú:fi
3f	wáfet	btú:fi	tú:fi
3p	wáfu	byú:fu	yú:fu
2m	wafé:t	btú:fi	tú:fi
2f	wafé:ti	btú:fi	tú:fi
2p	wafé:tu	btú:fu	tú:fu
1s	wafé:t	bú:fi	?ú:fi
1p	wafé:na	mnú:fi	nú:fi
imp	wfi:, wfí:, wfú:		

The perfective forms are just like other CVCV verbs having the vowel *a*. The imperfective forms can also be derived from the rules available. The form [yú:fi] derives from underlying /yə-wfi/; stress assignment gives the intermediate form [yəwfi], and the derivation of this form is completed by applying glide vocalization. The form [yú:fu] derives from /yə-wfi-u/ analogously. The rules applicable here are stress assignment, glide vocalization, and vowel cluster reduction. Note that glide formation might, in principle, apply to /yə-wfi-u/, but does not. Evidently, the verb has a consonant cluster at the stage where Glide Formation might apply, and that consonant cluster prevents Glide Formation from applying. Later, Glide vocalization eliminates the glide from the surface, but this process is ordered after the decision has been made to not apply Glide Formation.

1.6.1. CVCC STEMS

The final class of verbs which will be considered are those of the shape CVCC, where the final two consonants are identical. Examples with a verb selecting *a* in the two tenses are given in (42).

(42)	'remain'			'remain'		
	perf.	impf. ind.	impf. sbj	perf.	impf. ind.	impf. sbj
3m	támm	bitámm	ytámm	dáll	biðáll	ydáll
3f	támmet	bəttámm	ttámm	dállét	bətdáll	tdáll
3p	támmu	bitámmu	ytámmu	dállu	biðállu	ydállu
2m	tammé:t	bəttámm	ttámm	dallé:t	bətdáll	tdáll
2f	tammé:ti	bəttámmi	ttámmi	dallé:ti	bətdálli	tdálli
2p	tammé:tu	bəttámmu	ttámmu	dallé:tu	bətdállu	tdállu
1s	tammé:t	btámm	támm	dallé:t	bdáll	dáll
1p	tammé:na	məntámm	ntámm	dallé:na	məndáll	ndáll
imp	támm, támmi, támmu			dáll, dálli, dállu		

The aspect of these verbs which is most in need of comment is the fact that in the perfective tense, epenthetic *e:* is found before consonant initial suffixes. We have previously encountered this *e:* in the conjugation of CVCV verbs, where we assumed that it represented a change of the underlying vowel to *e:*. However, another possibility is that with CVCV verbs, *e:* is inserted, giving intermediate *?arae:t*, and then vowel cluster reduction applies to give the surface form. The appearance of *e:* in the same context with

CVCC verbs give credence to that analysis. What remains to be clarified is the context where *e:* is inserted: we find *e:* inserted after stems of the form CVCC and CVCV, as expressed in the following rule.

(43) *Stem augmentation*

$$\emptyset \rightarrow e : / CVC \left\{ \begin{array}{l} C \\ V \end{array} \right\} _ + C$$

The rules which have been motivated here, and the important orderings, are summarized below. A number of rules can be assumed to apply relatively early, and their specific ordering is not particularly important.

<i>Syncope</i>	$a \rightarrow \emptyset / VC _ Ce$
<i>Nasalization</i>	$b \rightarrow [+nasal] / _ [+nasal]$
<i>Lengthening</i>	$V \rightarrow VV / \#C_0 _ C\#$
<i>Stem augmentation</i>	$\emptyset \rightarrow e : / CVC \left\{ \begin{array}{l} C \\ V \end{array} \right\} _ + C$
<i>Stress assignment</i>	$\sigma \rightarrow \acute{\sigma} / _ ((\sigma)\sigma) \#$
<i>Pre-cluster shortening</i>	$V: \rightarrow \emptyset / _ CC$

For other rules, the order of application becomes more important.

