Morphology and Root Structure: a Beja Perspective

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Root structure, understandably enough, is usually approached from the perspective of phonology and the organization of the lexicon. But of course root-structure has everything to do with word structure, and hence morphology. Moreover in languages which are supposed to approach, however asymptotically, the totally motivated word structure always projected for Semitic, morphology and root structure must be all the more intimately intricated. Beyond Semitic of course, in one way or another the association of more or less distinct conjugation patterns with distinct root-classes is characteristic of all branches of AA.[1] Moreover, as opposed to the "advanced triconsonantalism" of Semitic, root structure in non-Semitic AA is commonly supposed to be less abstractly (tri-)consonantal, and closer to a "pronounceable" syllabic CVC norm. By way of a first attempt at a larger view of this process, what I would like to do here, after reviewing briefly the Semitic pattern is to examine this association in one Afroasiatic context, Beja.

1. *Root Structure and Morphology: Ge'ez*

Viewed from the point of view of the lexicon, root structure represents in some sense a long-term distillation, the result of a long-term filtering of lexical entries against a series of morpheme structure conditions governing favored and disfavored canonical forms. In the case of tri-radicality, such a filtering action over the long term should favor triconsonantal candidate lexemes as various older, and as it happens CVC-type, lexical items are replaced: one possible example might be the West Semitic "kill" /qtl/, which corresponds to Akkadian /dūk/, which itself may be AA, and hence perhaps represent the PSem term for "kill". At the same time as the filtering is going on, the associated derivational and inflectional (vowel-melody) patterns would be aligned to a tri-radical norm, so that those CVC-type lexical items that do survive become analyzable in terms of patterns which are in the *final* instance (= underlyingly?, historically?) extrapolated tri-radical patterns for canonical forms, and for derived and inflectional morphology. The big question of course is precisely the proper interpretation to give to "final" –and it is clear that no answer will necessarily apply to all languages nor to all stages of any language.

To take a typical example of extrapolated vocalic pattern from Semitic, consider the data in (1), where Ge'ez "middle weak" *mot-ä*, *yə-mäwwət*, *yə-mut* is obviously related in some way to the vocalic pattern of *nägär-ä*, *yə-näggər*, *yə-ngər*, or *läbs-ä*, *yə-läbbəs*, *yə-lbäs* (representing, respectively, the Semitic patterns -CaCaC- and -CaCi/uC-, where short *i*/*u* have merged in a marginally phonemic high

1. This is used in fact as a possible areal feature by Greenberg 1963, p. 48, fn 6 (cited in Hudson 1976, p. 131, fn 26).

central /ə/, which doesn't appear in open syllables). Moreover, this relation can be meaningfully notated by way of some sequence of schemata (which are variously taken as either abstract underlying or as historical reconstructions) such as *mäwt-ä*, *yə-mäwwət*, *yə-mwət* (or some similar calque on the strong pattern) as indicated in (2). These forms can be related to the actually occurring (surface?) pattern by productions such as: *äw* → *o*, *wə* → *u*, exemplified very informally in (3).[2]

(1) **Ge'ez base conjugation patterns**

Root-type	Stem-class	Past	Present	Jussive	
CCC	A1	*nägär-ä*	*yə-näggər*	*yə-ngər*	'speak'
CCC	A2	*läbs-ä*	*yə-läbbəs*	*yə-lbäs*	'wear'
CCW	A1	*fätäw-ä* (*fäto*-C)	*yə-fättu*	*yə-ftu*	'love'
CCW	A2	*bädw-ä*	*yə-bäddu*	*yə-bdäw*	'deserted'
CCY	A1	*bäkäy-ä*	*yə-bäkki*	*yə-bki*	'weep'
CCY	A2	*säty-ä*	*yə-sätti*	*yə-stäy*	'drink'
WCC	A1	*wäsäd-ä*	*yə-wässəd*	*yə-səd ~ yə-säd ~ yə-wsəd*	'take'
WCC	A2	*wädq-ä*	*yə-wäddəq*	*yə-däq*	'fall'
CWC	(A2)	*mot-ä*	*yə-mäwwət*	*yə-mut*	'die'
CYC	(A2)	*ked-ä*	*yə-käyyəd*	*yə-kid*	'trample'

(2) **Informal approximation to "Proto/Underlying" Ge'ez Stem Forms**

Root-type	Stem-class	Past	Present	Jussive
R_1 R_2 R_3 R_1 R_2 W	[α hgh]	*R_1ä R_2 [α hgh] R_3-	*- R_1ä R_2 R_2 [+hgh] R_3-	*- R_1R_2 [-α hgh] R_3-
R_1 W R_3	[+ hgh]	*R_1ä R_2 [+ hgh] R_3-	*- R_1ä R_2 R_2 [+hgh] R_3-	*- R_1R_2 [+ hgh] R_3-
W R_2 R_3	[α hgh]	*R_1ä R_2 [α hgh] R_3-	*- R_1ä R_2 R_2 [+hgh] R_3-	*- R_2 [-α hgh] R_3-

(3) **Some "Rules" for Ge'ez:**

1. V_{stem} is [+hgh] if R_2 is [-cons] *(assign middle-weak verbs to A2)*
2. [+hgh, -lng] → ə *(short /i/, /u/ merge to schwa)*
3. ə → ∅ /V[-voc] __ CV *(schwa disappears in open syllables)*
4. äw → o / …
5. äy → e / …
6. wə,əw → u / …
7. yə,əy → i / …

(vowel + glide rules)

8. [+voc, -lng] → [α hgh] / __ H [+ voc, α hgh] *(V assimilation across laryngeals -- handles most roots with H)*

In one way or another, this is the way extrapolated patterns have been systematized at least since Brockelmann (and long before), through Brame 1970, and on to a recent, and thorough, reprise in Voigt 1988a. A naively historical interpretation of these forms and productions is certainly possible[3], but one

2. The underlying forms of (2) and productions of (3), informally summarizing both historically ascertainable phonological changes and systematic synchronic relations, are given for illustration only, and not intended as definitive statements.

3. The naively historical view comes down to maintaining that the full 3R pattern, in lexicon and morphology, once applied universally (at least for verbs), and subsequent phonological changes involving glide-radicals (in this case) resulted in the attested

does not have to subscribe to such a view to think that this state of affairs could have historical implications. Obviously, on the one hand, there is a long-term tendency to organization of lexicon and morphology around 3R roots and schemata –achieved in various degrees in various Semitic languages. It seems moreover to be the case in Semitic that this tendency is an on-going one, ebbing and flowing to the rhythm of the well-known dialectic of phonetic decay and analogical recreation.

2. *Beja: the morphological context*

Beyond Semitic of course, in one way or another the association of more or less distinct conjugation patterns with distinct root-classes is characteristic of all branches of AA.[4] By way of a first attempt at a larger view of this process, what I would like to do here is to examine this association in one Afroasiatic context, and see what, if any such dynamic interplay exists. Within the Cushitic sub-family of AA generally, alongside an innovating suffix conjugation, which in fact is commonly taken to be one of the clearest shared innovations defining Cushitic,[5] there is an inherited prefix conjugation shared with Semitic and Berber.[6] In Cushitic, verbal lexical items either belong to the suffix conjugation class or the prefix conjugation class. In the suffixing class, the stem is invariant, and all inflection is given by suffixes. In the prefixing class, as in Semitic, subject person is rendered by prefixes, gender-number is distributed between prefixes and suffixes, while tense, mode, and derived stem are rendered by various prefixes, infixes, and suffixes, frequently accompanied by stem vowel ablaut. The following paradigms of the present and past tenses of the prefixing verb *-dbil-* 'collect' and the suffixing verb *tam-* 'eat' illustrate what is involved:[7]

(4) **Prefix and Suffix Conjugations in Beja**

	Prefix Conjugation		Suffix Conjugation	
PNG	Present	Past	Present	Past
1 sg c	*ʔa-danbíil*	*ʔa-dbíl*	*tam-á-ní*	*tám-a-n*
2 sg m	*dánbiil-a*	*tí-dbil-a*	*tam-tí-nii-a*	*tám-t-aa*
2 sg f	*dánbiil-i*	*tí-dbil-i*	*tam-tí-nii*	*tám-t-aa-y*
3 sg m	*danbíil*	*ʔi-dbíl*	*tam-íi-ní*	*tám-y-a*
3 sg f	*danbíil*	*ti-dbíl*	*tam-tí-ní*	*tám-t-a*

distribution of forms. Also possible is a resolutely and agnostically synchronic point of view –although the cognitive implications of this stance may be debatable.

4. This is used in fact as a possible areal feature by Greenberg 1963, p. 48, fn 6 (cited in Hudson 1976, p. 131, fn 26). Note also Sasse 1980, who reconstructs three root-types in Proto-East-Cushitic, CCC, CCV, and CV(V)C, according to the schema:

tense:	**CCC**		**CCV**	**CV(V)C**
present	*y-a-qtal-	*y-a-qt{u,i}l-	*y-{u,i}-qa(a)laa-	*y-a-qa(a)l-
past	*y-{u,i}-qt{u,i}l-		*y-{u,i}-qli(i)-	*y-{u,i}-q{u(u),i(i)}l-

5. Note however the reservations of Banti 2001.

6. In the absence of a reflex of this conjugation in Egyptian and Chadic (and Omotic, if that is not to be grouped with Cushitic) it is not certain whether this conjugation is to be reconstructed for AA as a whole, or is a defining innovation for an AA node which would consist of Cushitic, Semitic, and Berber (cf. Bender 1994). In any case, clearly an investigation parallel to this present should be conducted for Berber.

7. The Beja data here and in the following are as in Hudson 1974, 1976 –conveniently updated in Appleyard forthcoming– in particular the tonal analysis, where, briefly, /'/ marks an accented (high tone) vowel, and /`/ an accent on the vowel of the previous syllable. Reference will be made to the different dialect varieties described by Almqvist 1881, Reinisch 1893-94, and Roper 1928.

1 pl c	*n-ee-dbíl*	*ni-dbíl*	*tám-n-ay*	*tám-n-a*
2 pl c	*t-ée-dbil -na*	*tí-dbil-na*	*tám-t-ee-na*	*tám-t-aa-na*
3 pl c	*ʔ-ée-dbil -na*	*ʔí-dbil-na*	*tám-ee-n*	*tám-y-aa-n*

The inflectional forms of the stem-changing verb are based on seven stem-forms. A complete outline is given in Appendix A. In the following table the main classes of ablaut in the base stem are represented for the prefixing verbs *-dbil-* 'collect', *-dgi-* 'bring back', and *-liw-* 'burn':

(5) **Beja Base Stem Forms**

tense:	num:	CCC	CCV	CVC
present	sg	*-danbiil-*	*-dangii-*	*-nliiw-*
present	pl	*-ee-dbil-*	*-deeg-*	*-ee-liw-*
past		*-dbil-*	*-dgii-*	*-liw-*
aorist		*-ii-dbil-*	*-diig-*	*-ii-liw-*
modal		*-ii-dbil-*	*-daag-*	*-ii-liw-*
participle		*dibl-*	*digy-*	*liw-*
negative		*-dabiil-*	*-dagii-*	*-liiw-*

A first thing to note about (5) is that the prefixing verb in Beja is organized into inflectionally distinct root classes, which show striking parallels with Semitic strong and weak root classes.[8] There are three of these in Beja, which I have designated conventionally CCVC, CCV, CVC. As for the "tenses", what we can take as the most unmarked stem is what is here termed simply "past" (in the analysis of Hudson 1976, also the base stem-form for the imperative and main-clause negative present). Opposed to this is the morphosyntactically more marked or complex "aorist", basically formed from the past by prefixation of *-ii-*.[9] The "modal" stem, homophonous with the aorist except in "CCV" verbs, is most basically used in the formation of a modal form termed "permissive" by Hudson; in addition a "volitional" and an "optative" tense are formed from the "permissive" by additional affixes. Even more complex is the present, which in the base, but not in the derived stems, forms a present singular by prefixation/infixation of an *-n-*; otherwise the present (= present plural in the base) is formed by prefixation/infixation of *-ee-*. The

8. A tri-fold division, involving tri-radical roots, was recognized almost spontaneously and without much discussion by the earliest researchers in most AA languages. These were schematized variously as "triconsonantal", "biconsonantal or middle-weak", and "final-weak", and, as is obvious from the texts, assimilated implicitly to the long-established root classification of Semitic, introduced without comment. Whatever their proper synchronic or diachronic analysis, the conjugation of the Beja verb is based on these three stem-classes. Note also Sasse 1980, who reconstructs three root-types in Proto-East-Cushitic, CCC, CCV, and CV(V)C, according to the schema:

tense:	**CCC**		**CCV**	**CV(V)C**
present	*y-a-qtal-	*y-a-qt{u,i}l-	*y-{u,i}-qa(a)laa-	*y-a-qa(a)l-
past	*y-{u,i}-qt{u,i}l-		*y-{u,i}-qli(i)-	*y-{u,i}-q{u(u),i(i)}l-

9. Note wide discrepancy in terminology for these two tenses in various descriptions of Beja (where Al = Almqvist, Ap = Appleyard, H = Hudson, Ro = Roper, Re = Reinisch, V = Voigt, Z = Zaborski):

Al	**Ap**	**H**	**Re**	**Ro**	**V**	**Z**
Perfekt	Past	Preterite	Perfekt	Past	Aorist	Old Present
(Plusquamperfekt)	Aorist	Past	Plusquamperfekt	Conditional	Perfekt	Old Past

Almqvist does not find the "Plusquamperfekt" in his Bischari dialect, but does report that it was recorded in an earlier sketch by Munzinger. We are here following the terminology of Appleyard.

"participle" stem form, the only one occurring regularly without a prefix is used in the formation of various participles, and also a suffix-conjugated "future". The "negative" stem is used in the formation of various modal and subordinate clause negated forms. In addition to the base stem, there are also the expected derived stems: S- "causative", M- "reciprocal", T- "passive", a Reflexive stem also involving *t*-prefixation, and for all stems Intensive forms involving various processes (stem-vowel lengthening and total or partical reduplication).

3. *Epenthesis and Root Shape Clases*

In (5) it will be observed that there is an *-i-* vowel in both the "past" and the "participle" stem –in the former stem this vowel is between C_2 and C_3, whereas in the latter between C_1 and C_2. But on closer inspection it becomes obvious that these two *-i-*'s are of quite different origin. The "past" stem *-i-* is not subject to dropping and is clearly a characteristic vowel of the base "past" tense for our two paradigm verbs, and for most verbs in the language.[10] Parallel evidence seems to indicate however that the *-i-* after C_1 in the "participle" is epenthetic, used to break up an initial cluster: #CC.

Note in the first place its presence in the participles of the derived S (causative) S-Intensive, and Reflexive stems of the CCC verb *-dbl-* (similarly for *-dgy-* and *-liw-*):

(6) **Derived Stem Participles in Beja**

	S	S-intens	Refl
past	*-s-dabil-*	*-s-daabil-*	*-dbal-*
participle	*si-dabl-*	*si-daabl-*	*dibal-*

The same epenthetic vowel seems to occur also in the imperative. This stem, as has been mentioned, is formed from the "past" stem for all stem-classes and derived stems by suffixation of: /-’*a*/ m sg; /-’*i*/ f sg, /-’*na*/ pl, but with no prefixes. Thus from *-dbil*/*-dgii* + *-a*, *-i*, *-na* we have, with *-liw-*:

(7) **Beja Imperative**

	"CCC"	"CCV"	"CVC"
2m	*dibil-`a*	*digii-`a*	*liw-`a*
2f	*dibil-`i*	*digii-`*(*i*)	*liw-`i*
2p	*dibil-`na*	*digii-`na*	*liw-`na*

Thus we may be justified in postulating some process (probably not synchronic phonological):
(8) #CC → #CiC
remaining agnostic for the moment as to whether this is a general productive phonological or morphophonemic process, or only the remnant of one.[11]

10. In addition to *i*-stems, Almqvist (¶¶ 263, 265, 267) distinguishes *a*-stems (influence of laryngeal?) and *u*-stems (influence of labiovelar?). Cf. also Reinisch ¶238. In addition Almqvist (¶¶178) and Reinisch (¶¶220-222) distinguish an additional base intransitive conjugation characterized among other features by a present /-*i*/ suffix (Voigt 1988b).

11. In this context we are restricting our attention to verbs. Note that Hudson 1973, pp. 55f, a propos of the alternation [kíta:b] 'book' vs. [ó:kta:b] 'the book' implies that the underlying shape for 'book' is /ktaàb/, and that the [i] in the non-definite

In the same way, epenthetic /-*i*-/ is also used to break up internal CCC clusters. Contrast, for the three stem-classes the shapes taken by the participle stems *dibl-*, *digy*, and *liw-* before the vocalic suffixes /-*aa*'/ (past participle), /-*át*/ (future), and the suffix /-*tì*/ (bound participle), beginning with a consonant:

(9) **Beja Base Stem Participles**

	"CCC"	"CCV"	"CVC"
past participle	*dibl-aa*	*digy-aa*'	*liw-aa*'
future	*dibl-át*	*digy-át*	*liw-át*
bound participle	*dibil-tì*	*digiY-tì* > *digii-tì*	*liw-tì*

Leading us to postulate, with the same reservations, a process:
(10) VCCC → VCiCC
on the basis of this we now seem to be in a position to maintain the following scheme of base forms for the imperative and the participle:

(11) **Imperative and Participle Base Form**

	"CCC"	"CCV"	"CVC"
imperative	*dbil-*	*dgi-*	*liw-*
participle	*dbl-*	*dgy-*	*lw-*

Where the participle stem takes the form of a purely consonantal skeleton, with vocalization of *y* → *i* in final or preconsonantal position. In this perspective the non-epenthetic (by the same token "non-elidable") /i/ of the imperative-past stem is morphologically motivated, as are, by the same token, all of the other V_1 and V_2 of the morphological templates. Since, as can be verified by an inspection of Appendix A, except for three problematic Base stem forms (present plural, aorist, modal) which I deal with elsewhere, "CCY" agrees with "CCC" as against "CVC" in all the base and derived stem inflectional forms. The alignment of the segments in these two stem classes is therefore:

(12) CCC – CCV Alignment

C C C
| | |
C C Y

hence, at this point, we seem to be dealing with not three, but only two root-shape classes, biconsonantal and triconsonantal, the latter being subdivided into true-consonant final and *y*-final.

(13) **Root-Shape Classes**

Not	I = CC(V)C	II = CCV	III = CVC
But	Ia = CCC	Ib = CCY	II = CC

form is epenthetic. Note also that, as opposed to the causative participle, the M- and T- participles, generally formed by prefixed *-m-* and *-t-* when these are themselves preceeded by PNG prefixes, have the prefix forms *ʔam-*, *ʔat-*.

What provisional conclusions can be drawn from this material? Since in any of the actually occurring configurations, (-)CVC(-), (-)CVCC-, -CCVC-, or (-)CVCVC(-), the V is either morphologically motivated or epenthetic, it seems to be the case that the only essential constituents of the root is consonantal. Score one for abstract consonantal skeleton. In sum, what we do *not* have are CVC or CCV triradical $R_1R_2R_3$, where R_2 or R_3= V. Is it the case then that there are thus two primary roots classes –a biconsontal (or biradical, if you will) and a triconsonantal (triradical)– he latter subdivided into true-consonant final, and glide-final?[12] Although it may seem so, and perhaps *be* so from a synchronic-descriptive point of view, further consideration may indicate a somewhat different earlier state of affairs underlying the synchronic data. The details may be found in a more detailed consideration of the Beja ablaut system than we can undertake here.[13] Some idea of what is involved however can be gained from an inspection of the CCC and CC present plural, past, and aorist-modal forms of the B, B Intensive, and Derived stems (14 and 15 below).[14]

(14) **CCC "Finite" Forms**

Root	Tense	B	Bint	Deriv
CCC	pres	-ee-CCiC	-ee-CCiC	C_D-CaC V_2C
	past	-Ø-CCiC	-CaaCiC	C_D-CaCV_2C
	aor	-ii-CCiC	-ii-CCaC	C_D-CiCV_2C
	mod			

(15) **CC "Finite" Forms**

Root	Tense	B	Bint	Deriv
CC	pres	-ee-CiC	-ee-CCiC	C_D-ooC$_2$C
	past	-Ø-CiC	-CaaC	C_D-ooC$\bar{V}_2$C
	aor	-ii-CiC	-ii-CaC	C_D-uuCV_2C
	mod			

A comparison of the V_2 (the vowel between C_2 and C_3) in the CCC class (the) with the vowel between the two consonants of the CC class reveals that, with two high-lighted exceptions, these "stem" vowels are the same[15]. This suggests, as opposed to the CCC-CCV alignment of (12) an alignment:

(16) **CCC – C(V)C Alignment**

12. It should be noted that this is practically the view of the root given by Almqvist, who recognized a basic bipartite division between "einsilbige" and "zweisilbige Stämme", and then a division of the latter into "auf -*i* auslautende Stämme" and "konsonantisch auslautende Stämme" (Almqvist 1881, ¶¶248, 252, 257). Reinisch ¶¶ 197-199 distinguishes only between "zweiradicalige" and "dreiradicalige", but in the section on the present tense has a paragraph (¶237) on "Grundform mit ultima *y*".

13. Some of this detail will be found in Gragg (To Appear).

14. Derived non-Intensive, since the CC stem class does not have Derived Intensive; the Reflexive is left aside, since it raises other issues we will not go into here.

15. In the exceptional cases: (1) the "signature" initial long -*aa*- of the Bint past carries the day over the stem vowel -*i*-; and (2) the aorist-modal leveling of -*i*- vs. -*a*- has gone in one direction in CCC and another in CC.

where the two consonants of the CC class actually pattern with the last two of the CCC class, and that the CC class is actually functioning as a truncated CCC class, with a "missing" first C. Although it is certainly going beyond what has been established here to give a formal reconstruction of the missing C, the non-high ~ high *-oo-* ~ *-uu-* contrast of the V_1 vocalism, plus the rounding, in CC, in parallel with the C-*a-* ~ C-*i-* of the CCC suggests a rounded glide /*w*/ as a plausible candidate for the missing consonant, with a conjugation pattern which might look (very tentatively!) like (17):

(17) **Hypothetical "Proto-"CC Pattern**

Root	Tense	B	Bint	Deriv
*wCC	pres	$\bar{V}_{1L}wC\bar{V}_2C$	$\bar{V}_{1L}CCV_2C$	C_D-$waCV_2C$
	past	$ØwCV_2C$	$C\bar{V}_{1L}CV_2C$	C_D-$waCV_2C$
	aor	$\bar{V}_{1H}wCV_2C$	$\bar{V}_{1H}CCV_2C$	C_D-$wiCV_2C$
	mod			

4. *Conclusion: Tri-radicality all around?*

So let us recapitulate what this brief overview might be showing. The situation in the Semitic verb, extrapolating from the fragment of Ge'ez which we considered, is a stem-changing morphology, and lexical organization, solidly based on triradical template, with the exception of small number of old, even fossile forms, coming out of very basic vocabulary. Extrapolating backwards we find a centrally established RRR root template. There is varying behavior in the output paradigms for:

$$RRR \text{ where } R_{1or2or3} = [-cons]$$

But variations are best handled as approximations to:

$$RRR \text{ where } R_{1and2and3} = [+cons]$$

In Beja, on the other hand, especially when considered in a broader Cushitic context, we see a prominent, but apparently receding[16] stem-changing morphology based on both RR and RRR roots, with adaptation of morphological material and processes to the two environments.

The material here considered yields really only two snapshots of a development for which much more evidence is available and needs to be considered. Is there any evidence here for a priority of monosyllabic, biconsonantal lexicon and morphology? There seems to be no evidence that the adaptation is one of fitting into a RRR environment material more at home in a RR framework. On the contrary, what is striking is that in a system in which stem-changing morphology is recessive, there is not only a lexical subsystem based on a purely consonantal skeleton, but there continue to be visible signs of RRR patterns still attracting what might be RR antecedents.

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16. Note that there is apparently some ebb and flow here also, to the extent that Saho, and probably also Beja, have seen in the past few centuries the percentage of stem-changing verbs in the lexicon increase, thanks to the assignment of Semitic (Ethiopic and Arabic) loan words into this verb conjugation category by increasingly bilingual native speakers (Hayward & Orwin 1991). The long-term tendency however is clearly to decline.

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6. *Appendix A: Beja Stem Forms*

CCC Stem Forms

tense:	num:	B	B-intns	S	S-intns	M	M-intns	T	T-intns	Refl
present	sg	-	-ee-	-s-	-s-	-m-	-mee-	-t-dabiil-	-t-daabiil-	-t-
present	pl	-ee-	-ee-	-s-	-s-	-m-	-mee-	-t-dabiil-	-t-daabiil-	-t-
past		-dbíl-	-	-s-	-s-	-m-	-mee-	-t-	- - -	-dbal-
aorist		-ii-dbíl-	-ii-	-s-	-s-	-m-	-mii-	-t-dibil-	-t-diibil-	-t-
modal		-ii-dbíl-	-ii-	-s-	-s-	-m-	-mii-	-t-dibil-	-t-diibil-	-t-
future		dibl-	daabl-	si-	si-	ʔam-	ʔamee-	ʔat-	ʔat-	dibal-
negative		-dabíil-	-	-s-	-s-	-m-	-mee-	-t-dabiil-	-t-daabiil-	-

CCV Stem Forms

tense:	num:	B	B-	S	S-	M	M-intns	T	T-intns	Refl
present	sg	-	-ee-	-s-	-s-	-m-dagi-	-mee-	-t-dagi-	-t-daagi-	-t-
present	pl	-dèeg-	-ee-	-s-	-s-	-m-dagi-	-mee-	-t-dagi-	-t-daagi-	-t-
past		-dgì-	-	-s-	-s-	-m-	-mee-	-t-	-t-	-dge-
aorist		-dìig-	-ii-	-s-	-s-	-m-dig-	-mii-	-t-dig-	-t-daagi-	-t-dig-
modal		-dàag-	-ii-	-s-	-s-	-m-diga-	-mii-	-t-diga-	-t-daaga-	-t-diga
future		digy-	daag-	si-	si-	ʔam-	ʔamee-	ʔat-	ʔat-	dige-
negative		-dagì-	-	-s-	-s-	-m-dagi-	-m-dagi-	-t-dagi-	-t-daagi-	-

CVC Stem Forms

tense:	num:	B	B-intns	S	S-intns	M	M-intns	T	T-intns	Refl
present	sg	-nlíiw-	-ee-liw-	-s-oo-liiw-	- - -	-m-oo-liiw-	- - -	-t-oo-liiw-	- - -	-ee-t-liiw-
present	pl	-ee-líw-	-ee-liw-	-s-oo-liiw-	- - -	-m-oo-liiw-	- - -	-t-oo-liiw-	- - -	-ee-t-liiw-
past		-líw-	-laaw-	-s-oo-liw-	- - -	-m-oo-laaw-	- - -	-t-oo-laaw-	- - -	-law-
aorist		-ii-líw-	-ii-liw-	-s-uu-liw-	- - -	-m-uu-liw-	- - -	-t-uu-liw-	- - -	-ii-t-liw-
modal		-ii-líw-	-ii-líw-	-s-uu-liw-	- - -	-m-uu-liw-	- - -	-t-uu-liw-	- - -	-ii-t-liw-
future		líw-	laaw-	s-oo-lw-	- - -	ʔam-oo-laaw-	- - -	ʔat-oo-laaw-	- - -	law-
negative		-líiw-	-laaw-	-s-oo-liiw-	- - -	-m-oo-liiw-	- - -	-t-oo-liiw-	- - -	-laaw-