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The Derivation of Triconsonantal Weak Verbal Nouns in Modern Standard Arabic: A Nonlinear Phonological Analysis

Eman Ali [α] & Radwan Mahadin [σ]

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1. Introduction

1.1. Background

Modern Standard Arabic (MSA) is a standard variety of Arabic which emerged around the end of the eighteenth century as a direct descendant of Classical Arabic (CA) (Fischer 1997, 188). A distinction between CA and MSA is commonly made by linguists. The former is a standard variety of Arabic used in the Qurʔa:n and in the pre and early Islamic eras, whereas the latter is the form utilized in formal language contexts in contemporary Arab world. There are 28 consonantal phonemes in MSA which are produced in various places of articulation. Table 1.1 is taken from Ali and Mahadin (2021, 2131) and it presents a phonetic description of MSA consonantal phonemes.

Table 1.1: MSA consonantal phonemes.

b	Voiced bilabial stop	s	Voiceless dental-alveolar fricative	k	Voiceless velar plosive
m	Voiced bilabial nasal	z	Voiced dental-alveolar fricative	x	Voiceless uvular fricative
f	Voiceless labiodental fricative	t̲	Voiceless emphatic dental-alveolar plosive	ɣ	Voiced uvular fricative
j	Voiced palatal glide	d̲	Voiced emphatic dental-alveolar plosive	q	Voiceless uvular stop
w	Voiced labiovelar glide	s̲	Voiceless emphatic dental-alveolar fricative	h̲	Voiceless pharyngeal fricative
θ	Voiceless interdental fricative	ð̲	Voiced emphatic interdental fricative	ᶜ	Voiced pharyngeal fricative
ð	Voiced interdental fricative	r	Voiced dental-alveolar tap	ʔ	Voiceless glottal stop
t	Voiceless dental-alveolar stop	l	Voiced dental-alveolar lateral	h	Voiceless glottal fricative
d	Voiced dental-alveolar stop	ʃ	Voiceless postalveolar fricative		

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In contrast to MSA rich inventory of consonantal phonemes, the inventory of vocalic phonemes in this standard variety of Arabic only contains three short vowels which are presented in Table 1.2. Each of the three short vocalic phonemes in MSA has a long counterpart. Nevertheless, length is argued to be a phonetic but not a phonemic feature of MSA vowels (Brame 1970, Levy 1971, Mahadin 1994, Mahadin and El-Yasin 1998, among others). That is, in spite of the fact that long vowels have phonetic realizations, these vowels are not present on MSA phonemic level of representation. A long vowel is conversely assumed to be composed of a sequence of a short vowel and a glide in MSA phonemic representation. This sequence is changed to a long vowel through the application of certain phonological processes such as glide deletion (e.g. /uwu/→ /uu/ → /u:/) and glide assimilation (e.g. /ij/→ /ii/→ /i:/).

Table 1.2: MSA vocalic phonemes

i	high front unrounded
a	low central unrounded
u	high back rounded

In addition to the short and long monophthongs, it is also hypothesized that MSA has a number of diphthongs, i.e. vowels that have the phonetic quality of two sounds but function as one phonological unit (cf. Aniis 1975, Watson 2002, Ryding 2005, Al-Nuri 2007). Aniis (1975, 161) points out that Arabic diphthongs are composed of a combination of the low vowel /a/ and a glide which functions phonologically as one complex vocalic unit. He classifies diphthongs into two types based on the sequencing of their two components. The first type is identified as the falling diphthong and it is composed of a vowel-glide sequence (e.g. ***b*ajt** 'house') and the second is labelled the rising diphthong and it comprises a glide-vowel sequence (e.g. ***ja***sa:r 'left'). On the other hand, Watson (2002, 22), Ryding (2005, 33), Al-Nuri (2007, 219-220) maintained that there are only two diphthongs in MSA, namely the /aw/ and /aj/, which are of the first type.

Conversely, one might argue that the members of the sequences which form the falling and rising types of diphthongs behave phonologically as two units and not as one vocalic unit in MSA. For instance, the alleged rising type of MSA diphthongs commonly occurs in the initial position of the syllable (e.g. ***wa***bar 'fur'). However, the occurrence of a syllable that starts with a vowel, in this case a diphthong, is forbidden in MSA. This is attributed to its violation of a constraint that prohibits the occurrence of onsetless syllables, i.e. syllables that have no consonant in their initial position, in this variety of Arabic.

Similarly, proposing that a low vowel and a glide sequence functions as one vocalic unit in MSA can cause the violation of its constraint on onsetless syllables. For example, suggesting the /aw/ sequence in *ð**aw**aba:n* 'melting' is a falling diphthong entails that the second syllable in this word, viz. the /ab/ syllable, is onsetless which is prohibited in MSA. Consequently, the /aw/ sequence in this word is proposed to be composed of two separate phonological units, i.e. a vocalic unit and a consonantal unit, instead of being composed of one complex vocalic unit. The vocalic unit functions as the nucleus of the first syllable in ***ða**waba:n* and the consonantal unit functions as the onset of its second syllable, i.e. the /wa/ syllable. On the basis of these observations, vowel-glide and glide-vowel sequences are assumed to function as separate phonological units and not as diphthongs in MSA.

As for MSA syllable structure, the onset in this variety of Arabic is an obligatory constituent and thus the syllables that start with a vowel are prohibited. Moreover, the onset constituent in MSA is not to be composed of a consonant cluster, whereas the coda might be empty or contain a cluster of no

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more than two consonants (Watson 2002, 56-59; Ryding 2005, 35-36). In terms of morphology, MSA morphology is described as being mainly nonconcatenative in nature. Nonconcatenative morphology, as opposed to its concatenative counterpart, does not involve concatenating discrete prefixes and suffixes to words without affecting their internal shape. Rather, this type of morphology takes place word-internally and relies heavily on the processes of "reduplication, infixation, morphologically-governed ablaut, and suprafixation" (McCarthy 1981, 373). All the processes that are identified by McCarthy (1981) are frequently employed in Arabic, and in other Semitic languages, except for suprafixation. This morphological process involves inducing a change in the suprasegmental features (e.g. tone and stress) of a word to signal particular grammatical functions as in "the variation in the tonal pattern of the stem as a mark of verbal aspect in Tiv" (ibid).

Reduplication refers to repeating a part of a word to modify an aspect of its meaning or grammatical function. An example of reduplication involves doubling, or geminating, the consonant /s/ in the verb *daras-a* 'he studied' to derive its causative form *darras-a* 'he caused to study'. Infixation can be defined as the insertion of an affix within a word such as the infix /t/ which is added to the verb *katab-a* 'he wrote' to modify its meaning in *ktatab-a* 'he recorded on an official list' (McCarthy 1979, 240). Morphologically-governed ablaut is exemplified by changing the vowel /a/ in the verb *ja-qraʔ* 'he reads' into /u/ to derive its passive voice *ju-qraʔ* 'it is read' (Ryding 2005, 46).

Nonconcatenative morphology "pervades most of the derivational system and a good portion of the inflection" in Arabic (Kentsowicz 1994, 397). The remaining portion of Arabic derivational and inflectional systems utilizes the concatenative processes of prefixation and suffixation. For example, the future marker prefix *sa* 'will' is added to the left end of the verb *ja-ʃrah* 'he explains' to derive its future form ***sa****-ja-ʃrah* 'he will explain'.

An important aspect of Arabic morphology is discussed by Brame (1970) who distinguishes between the Arabic root, stem and word. The root is commonly composed of three consonants, or radicals. The stem includes "the underlying radicals with any infixes which may be accompanying" and "the stem taken together with all other affixes will be called the word" (ibid, 4). For instance, infixing the stem vowels, /a:/ and /i/, to the consonantal root [slm] forms the stem *sa:lim* 'he is safe'. Adding the masculine plurality suffix *u:n* to the stem *sa:lim* forms the word *sa:lim-u:n* 'they are safe'.

1.2. Aims of the Study

The present study aims at utilizing two models, viz. the X-slot and the feature geometry models, of nonlinear phonology for the examination of the phonological processes that VNs undergo in the course of their derivation from verbal stems in MSA. The VNs, which are listed under each of the verbal entries in the corpus-based dictionary, viz. *muᶜdʒam ʔalluɣah ʔalᶜarabijjah ʔalmuᶜa:sirah,* that serves as the source of data collection are targeted in the study. The analysis only explores the derivation of the weak forms of these VNs from triconsonantal (form I) verbs.

1.3. The VN

The VN, also known as *ʔalmasdar* 'the source', the noun of action and the noun of verb, is a deverbal substantive which denotes the action or the state of the verb from which it is derived (Wright 1986, 110; Al-Rajihi 1984, 66; Ryding 2005, 75; Al-Samurrai 2013, 71). For example, the VN *rakd* 'running' expresses the action denoted by its corresponding verb *ja-rkud* 'he runs' and the VN *ʔimtila:k* 'possessing' refers to the state expressed by its verbal stem *ja-mtalik* 'he possesses'. Contrary to the other deverbal substantives, such as the active participle (AP) and the passive participle (PP), the derivation of the VNs is not analyzed in the standard or the nonlinear approaches of generative phonology. Accordingly, the current study, to the researcher's knowledge, is the first attempt to explore the derivation of the VN in the generative approach of phonology.

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According to Watson (2002), VNs inflect for number and gender. She states that the "unmarked number" for them is the singular and "the unmarked gender" is the masculine. As such, they generally inflect for the dual and plural numbers as well as for the feminine gender. In addition to the inflection for number and gender, the bare forms of VNs also inflect for case. Arabic has three cases: nominative, genitive, and accusative. These cases are generally indicated by the vowel suffixes: u 'damma' i 'kasra' and a 'fatha', respectively (Ryding 2005, 166). Another inflectional feature that characterizes VNs is definiteness. VNs can be marked for definiteness or indefiniteness. The definiteness marker is the prefix 'ʔal' (e.g. ***ʔal-*** *waᶜd* 'the promise') and the indefiniteness marker is the suffix 'n' (e.g. *waᶜd-u**n*** 'a promise') (ibid, 156).

In accordance with the number of consonants in their roots, VNs are mainly divided into two categories, namely triconsonantal (e.g. *madʒd* 'glory') and quadriconsonantal VNs (*tadʒriba* 'experiment'). Ryding (2005, 92) argues that there are few VNs in Arabic that are biconsonantal such as *hawa:* 'passion'. Brame (1970) and Mahadin (1982), on the other hand, demonstrate that biconsonantal nouns are originally triconsonantal but they appear to be biconsonantal on the surface form as the result of the application of certain phonological processes.

VNs are further classified according to the type of consonants in their roots into strong, geminated, glottalized and weak nouns. Strong VNs (e.g. *naṣr* 'victory') have three or four true consonants in their roots. Geminated VNs have identical second and third radicals (e.g. *ra**dd*** 'reply'); whereas glottalized VNs have a glottal stop as one of their radicals (e.g. *θaʔr* 'revenge') . Finally, a glide (/w/ or /j/) constitutes at least one of the radicals of weak VNs. The weak VNs that have one glide are divided in accordance with the position that the glide occupies into initially (e.g. ***w**aᶜd* 'promise'), medially (e.g. *na**w**m* 'sleep') and finally (e.g. *sal**w*** 'forgetting') weak VNs (Wright 1896). As for the weak VNs that have two glides in their stems, they are identified as doubly-weak VNs (e.g. ***wiqa:jah*** 'protection'). This study only examines the phonological processes that weak VNs undergo in the course of their derivation. The weak VNs are used as the object of analysis due to the inherent instability of the glides which constitute at least one of the radicals of their roots and causes them to be susceptible to diverse phonological rules (Brame 1970, 28). Accordingly, a thorough inspection of the phonological processes that are involved in the derivation of VNs can be provided by choosing weak VNs as the object of analysis.

VNs can be derived from the ten forms of verbs in MSA (cf. Wright 1986, 110-111; Al-Faxiri 1996, 175; Ryding 2005, 75). This study is restricted to the analysis of the VNs which are derived from form I (triconsonantal) of verbs because form I is the bare form of the verb which has a fundamental structure that serves as the source of derivation of the other nine verbal forms (form II- form X). Accordingly, targeting the derivatives of form I can also shed light on the derivational processes employed for forming the derivatives of the other forms of verbs.

The usual practice among linguists (e.g. Ibin jinni (d.1002) and Brame (1970)) is to use the perfective verbal stem as the basic form from which verbal derivatives, including VNs, are derived. However, many researchers, such as Mahadin (1982), Benmamoun (1999) and Abdo (2008), argue for using the imperfective stem as the basic form for derivation. Strong pieces of evidence are presented to support this argument. For instance, Mahadin (1982) asserts that the vowel of the perfective stem can be predicated from that of the imperfective stem, but not vice versa. That is, the stem vowel of the imperfective is lexically determined in the sense that it cannot be predicated accurately by general rules and thus native speakers are assumed to store the imperfective stems in their mental lexicons along with the rules that derive their perfective counterparts. In the same vein, Benmamoun (1999, 180) ascribes taking the imperfective as the input to Arabic derivational morphology to its unmarked default status due to its lack of specification for tense. He further maintained that there is a close similarity between the imperfective stem and various nominal and verbal derivatives which makes their derivation from imperfective stems more economical than deriving them from their perfective counterparts.

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Following Mahadin (1982), Benmamoun (1999) and Abdo (2008), the imperfective, instead of the perfective, verbal stem of form I is used as the base of derivation. The stem of form I imperfective verbs has the skeletal shape CC $\begin{Bmatrix} a \\ i \\ u \end{Bmatrix}$C. This stem can never surface without a personal prefix of the |CV| shape due to the violation of a constraint on MSA syllable structure which bans the occurrence of a cluster of consonants in syllable-onset position (cf. Ali and Mahadin 2021). The prefix |ja| is the unmarked prefix of the imperfective stem, in addition to the |ja|, a number of personal prefixes can attach to the imperfective stem such as |ʔa|, the first person singular prefix, and |na|, the first person plural prefix. The |ja| prefix and other prefixes and suffixes are not part of the base for deriving forms from the verb, rather only the stem of the verb is used as the base of derivation (e.g. the stem /drus/ in the imperfective verb ***ja-drus-u*** 'he studies, indicative case' serves as the base of derivations of other forms from this verb without the personal prefix /ja/ and the indicative case suffix /u/).

2. Method

2.1. Data Collection

The corpus-based dictionary which serves as the source of data collection in the current study is *muᶜdʒam ʔalluɣah ʔalᶜarabijjah ʔalmuᶜa:s̲irah* 'Dictionary of Modern Arabic Language'. This dictionary is compiled by trained researchers led by Omar in 2008 with the purpose of covering the majority of words used in MSA. One of the main goals of the dictionary compilers is avoiding the shortcomings of the pre-existing dictionaries such as building on earlier lexicographic work without conducting thorough examinations and mixing obsolete and common words (Omar 2008). The dictionary is compiled from seven types of sources of MSA which include:

1. Contemporary newspapers and magazines (e.g. ʔalʔhra:m ʔalqa:hirijjah, ʔaʃʃarq ʔalʔawsat̲ ʔassuᶜu:dijjah, ʔaddawh̲ah ʔalqat̲arijjah and ʔalh̲aja:h ʔallubna:nijjah).
2. Audio materials presented in MSA (e.g. news and news commentary programs).
3. Children's stories.
4. Prominent publications on literature, psychology, law, economy, philosophy, history, arts, environment, technology, education, sports, science, etc.
5. Religious sources (e.g. the Qurʔa:n and the sayings of Prophet Muhammad) and common proverb collections.
6. The publications of the Arabic Language Academy in Cairo.
7. Grammar books and dictionaries.

The data from these sources are assembled in a corpus that contains more than one hundred million words which is analyzed statistically in order to include the common words in the dictionary and exclude the uncommon ones. The perfective form of the verb is used as the headword of the 10. 475 verbal entries in this monolingual dictionary. Three deverbal substantives are listed under each of these verbal entries and they include the AP, PP and VN.

The 1222 weak VNs which are listed under triconsonantal (form I) verbal entries in *muᶜdʒam ʔalluɣah ʔalᶜarabijjah ʔalmuᶜa:s̲irah* are grouped in tables in the appendices in accordance with their morphological patterns. The tables in the appendices present the dictionary entry number, the consonantal root, the imperfective verb and the gloss corresponding to each instance of these VNs. Since this study aims at analyzing the phonological aspects of the targeted VNs, these VNs, their consonantal roots and imperfective verbs are not written in MSA orthography. Rather, the phonological symbols which are presented in Table 1.1 and Table 1.2 are employed for transcribing them. It should be noted that the morphological patterns of these VNs are determined on the basis of their realization in the surface representations of strong stems. This is done in an attempt to provide a

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comprehensive account of these patterns and to identify the phonological processes that cause the apparent deviation of the surface representations of weak nominal stems from their strong counterparts.

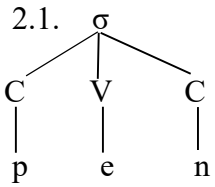
2.2. The Approach

Nonlinear phonology is a recent advance in the school of generative phonology. As opposed to the linear structure of the standard approach of generative phonology, the alternative structure is segregated into distinct levels. These levels are ordered independently of each other but are interconnected by means of association lines (McCarthy 1982, 2). On the basis of utilizing distinct levels of representations, this modified approach of generative phonology is termed multi-linear or nonlinear phonology.

Nonlinear phonology is originally proposed to handle suprasegmental features, which are problematic for the standard (linear) approach. Within the realm of nonlinear phonology, two main theoretical approaches can be identified. These approaches are metrical and autosegmental phonology. The former approach is presented by Liberman (1975) as a theory of stress, whereas the latter is originally proposed by Goldsmith (1976) for describing tone in tonal languages. After proving that it is capable of providing a systematic analysis of tone, the domain of the autosegmental approach of phonology is extended to various non-tonal phenomena. The extensions of the autosegmental domain resulted in developing two major models of this approach, viz. CV phonology and feature geometry.

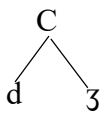
CV phonology is an autosegmental model designed by Clements and Keyser (1983) to represent the internal structure of syllable. This representation is composed of three tiers, i.e. the syllable node, CV and segmental tiers. The three-tier hierarchical structure of the syllable /pen/ is employed as an illustrative example below:

2.1.

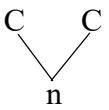


Serving as a model of autosegmental phonology, the association between elements on the CV tier and the segmental tier is subjected to a number of association conventions. Two of the major association conventions are the no-crossing constraint and the obligatory contour principle (OCP). The former prohibits the crossing of association lines and the latter prohibits identical adjacent segments at the segmental tier (Goldsmith, 1976). Adhering to these conventions allows accounting for cases in which the association between these two tiers is not formed in a one-to-one fashion. An example of a one-to-many association pattern is exemplified by the affricate /dʒ/ which is classified as a complex (contour) segment, while a many-to-one association between the CV tier and the segmental tier is found in the geminate (long consonant) /n:/. These are presented in 2.2 (a) and (b) respectively.

2.2. a.



b.

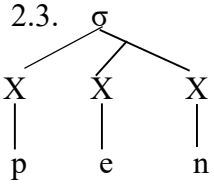


The development of CV phonology involves introducing some modifications to this model. One of these modifications is introducing a syllable constituent, labelled the rhyme, that contains the nucleus and the coda. Combining the nucleus and the coda into one constituent independent from the onset is based on the analysis of the phonotactic constrains of co-concurrence restrictions (Selkirk 1982). These constraints indicate that the restrictions on the co-concurrence of vowels and their preceding consonants are very rare, while those restrictions are very frequent between vowels and their succeeding consonants. Consequently, the latter are assumed to form a unit independent from the former.

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In addition to the introduction of the rhyme, another modification to CV phonology is based on considering the distinction between the C and V elements on the CV tier redundant and arguing that these elements are to be replaced with empty uniform positions labelled as X-slots (Levin 1985). A major impetus for the development of the X-slot model is ascribed to observing that C elements can be associated with vowels and V elements can be mapped to consonants which is common in compensatory lengthening processes (cf. Hayes 1989). Integrating these two modifications into the representation of the syllable /pen/ is shown in 2.3.

2.3.

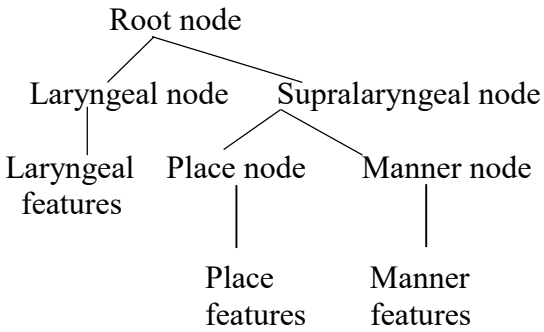


Another model of autosegmental phonology is developed principally by Clements (1985) for the description of the internal structure of speech sounds and it is identified as the feature geometry model. This model emerged as a reaction to the standard generativists' assumption that the distinctive features from which a given speech segment is composed are grouped into an unordered matrix that has no internal organization. The standard representation of features is found to be incapable of depicting the fact that certain sets of features constitute a unit with respect to phonological rules and to phonemic inventory constructions. Another shortcoming of this representation is that it fails to express the fact that certain features introduce distinctions in other features such as the features [anterior] and [distributed] which are only relevant for coronal consonants (Kenstowicz 1994, 146).

In order to capture generalizations about the natural groupings of features, Clements (1985) proposed a hierarchical organization of segment-internal features into functionally independent classes that are grouped under nodes of a tree structure. The organization of the features into the tree structure is primarily determined by the behavior of features in phonological processes and constraints. That is, the features that behave as an independent unit with respect to processes and constraints, such as assimilation, dissimilation, reduction and OCP, are assigned to the same node (ibid, 227).

Within the tree structure of this model, the features occupy the terminal nodes and they are dominated by intermediate nodes termed the class nodes. The class nodes are divided into laryngeal and supralaryngeal nodes and the latter node, in turn, comprises the place and manner subnodes. The root node dominates the class nodes and groups all the features of a given segment and links them to the CV tier. The diagram below presents the outline of Clements' (1985) feature geometry model:

2.4.



As opposed to the standard approach which treats features as matrix entries that are incapable of autonomous behavior, within the feature geometry model, features are regarded as independent units,

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or autosegments, that can engage independently in phonological processes (ibid, 227). A major advantage to considering features as autosegments is facilitating accounting for the phonetic naturalness of assimilation processes.

Since the development of Clements' (1985) model of feature geometry, various modifications to this model were proposed through subsequent research in this area. One of the leading proposals is assuming that the major class features [consonantal] and [sonorant] form the root of the feature tree (McCarthy 1988, Halle 1992, Kenstowicz 1994, among others). A second important development introduced by McCarthy (1988) is dispensing with the manner and the supralaryngeal nodes. Dispensing with the manner node is based on testing it against phonological rules and constraints which reveal that the daughters of the manner node, viz. [continuant], [nasal], [lateral] and [strident], do not act as a unit with respect to them. As the manner features are not grouped under a class node and are not dependent on a specific place of articulation, they are directly linked to the root node (e.g. McCarthy 1988, Halle 1995). As a result of eliminating the manner node, the supralaryngeal node ends up dominating only the place node. Upon examination, the supralaryngeal and place nodes turn out to perform complementary functions in phonological rules (McCarthy 1988, 92-93). Accordingly, the supralaryngeal node is also dispensed with due to playing no role in feature geometry.

Another significant elaboration on the model of feature geometry is the introduction of the articulator theory by Sagey (1986). This theory plays a major role in the internal organization of the place node. Based on the articulator theory, the place node is divided according to the constricting gestures of the active articulators of segments into labial, coronal and dorsal classes. The labial, coronal and dorsal articulators dominate a set of articulator-bound features. Articulator-bound features, as opposed to articulator-free features exemplified by the root and manner features, depend exclusively for their execution on one of these three articulators (Halle 1995, 3). The articulator-bound feature [round] is a dependent of [labial]; [anterior] and [distributed] are dependents of [coronal]; and [back], [high] and [low] are dependents of [dorsal].

After presenting extensive evidence for considering gutturals a natural class of sounds, a further modification to the place node is proposed by McCarthy (1994). This modification involves introducing a place node to define gutturals. Gutturals are consonants produced with "a primary constriction in the posterior region of the vocal tract" and they include a set of glottal (ʔ, h), pharyngeal (ḥ, ʿ) and uvular (x, ɣ) consonants (McCarthy 1994, 191). In order to locate this node in the hierarchical tree, Vaux (1993) breaks the place node into two branches, viz. the upper vocal tract node (UVT) which is employed for producing the oral sounds and dominates the labial, coronal and dorsal articulators and the lower vocal tract node (LVT) which is employed for producing the guttural sounds and dominates the dorsal, laryngeal and radical articulators.

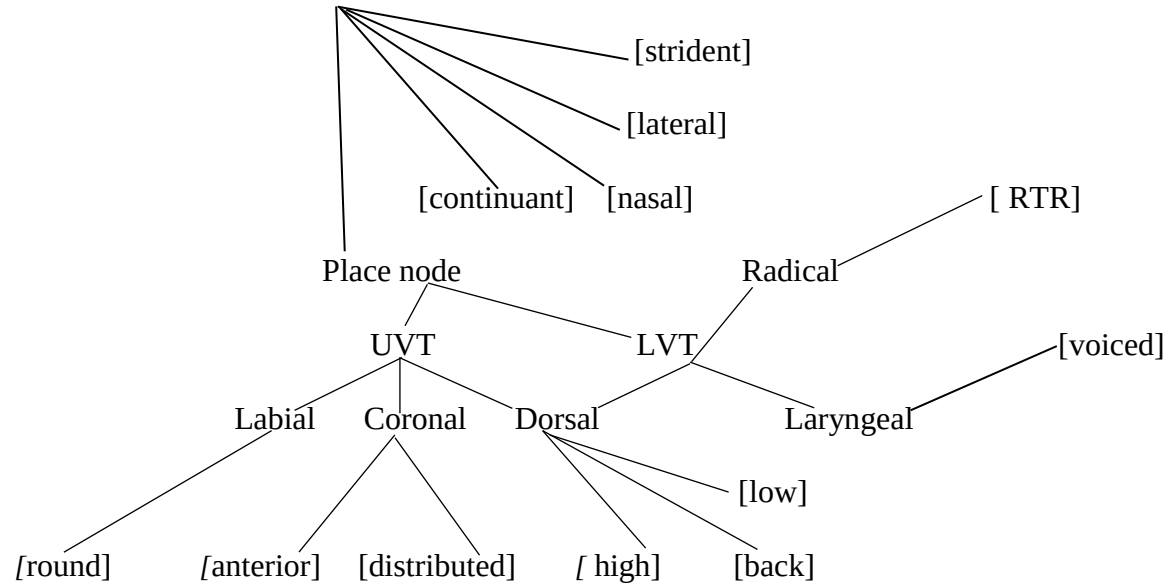
As can be noticed, the dorsal articulator is dominated by the UVT and LVT nodes. Kenstowicz (1994, 459) argues that the double domination of the dorsal articulator by these nodes makes sense since this articulator lies at the boundary between the oral and pharyngeal cavities and can thus enter either of them. As for the articulator-bound features that are dominated by the laryngeal and radical articulators, Vaux (1996) maintains that the feature retracted tongue root [RTR] is used for the description of both uvulars and pharyngeals and it is dominated by the radical articulator. The laryngeal articulator is involved in the production of the glottal sounds and it also encompasses the articulator-bound feature [voiced] which is used for classifying speech sounds according to their voicing specifications (cf. Davis 1995, Halle 1995, Halle, et al. 2000).

Finally, Clements' (1985) model of feature geometry is integrated with the underspecification theory which entails that redundant features are underlyingly underspecified for the relevant segments and stated by means of a general rule identified as a redundancy, or a default, rules. Spencer (1996, 126-

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127) maintains that representing redundancies in terms of rules enables capturing significant linguistic generalizations and giving an accurate account of various phonological processes. Watson (2002) and Bin Muqbil (2006) demonstrate that the interaction of the feature geometric hierarchy with universal and language-specific default rules renders it unnecessary for any feature to be bivalent. Featural monovalency entails leaving the absence of a feature underspecified and only specifying its presence. Based on the aforementioned modifications of the proposed structures of the feature geometry, the overall picture of the model that will be used in the current study is presented in 2.5.

2.5. [consonantal], [sonorant]



2.3. Data analysis

The phonological processes that the targeted VNs undergo in the course of their derivation from their verbal stems are analyzed in the current study. The analysis of the derivational processes of these VNs starts with determining the underlying shapes of the imperfective verbal stems from which they are derived. It should be indicated that the surface shapes of these imperfective verbal stems are listed under each of the perfective verbal entries in *mu^{c}dʒam ʔalluɣah ʔal^{c}arabijjah ʔalmu^{c}a:s̲irah.* As demonstrated in Ali and Mahadin (2021), the imperfective verbal stems from which deverbal derivatives, including the VNs, are derived have the underlying shape $|C_1C_2VC_3|$. The underlying shapes of the imperfective stems are used as the bases for deriving the underlying shapes of their corresponding VNs. Afterwards, the phonological processes that cause changing the underlying shapes of these VNs to their surface shapes are discussed.

Two models, viz. the X-slot and the feature geometry models, of nonlinear phonology are employed for conducting the analysis. The feature geometry model offers a thorough depiction of the internal structure of speech segments which enables accounting for the naturalness of the assimilation and dissimilation processes which target the analyzed VNs in the course of their derivation. To make the examination feasible, only the parts of the feature geometry trees that are relevant for the analysis will be represented.

The X-slot model is employed for representing the rules which do not require referring to the internal structure of speech segments such as elision, epenthesis, compensatory lengthening and metathesis rules. For instance, elision rules result in the deletion of whole speech segments and not specific features of them; thus representing them within the X-slot model is more efficient and economical. This model utilizes the syllable, a purely phonological domain, for the expression of phonological processes. In addition to the syllable, the morpheme and word domains are also utilized

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for the statement of phonological processes to account for the close interactions between phonology and morphology. The analysis of the interactions between these two branches of linguistics, identified as morphophonemics, is argued to be important for developing any comprehensive theoretical model of phonology of or morphology (cf. McCarthy and Smith1983, Gussmann 1985, Jensen 1990, Oztaner 1996).

3. Results and Discussion

3.1. Introduction

The morphological patterns that are utilized for forming VNs from form I triconsonantal verbs are numerous (cf. Wright 1986, 110-111; Al-Faxiri 1996, 175; Ryding 2005, 75). On other hand, the patterns of the VNs which are derived from the other nine forms of the verb are much more limited in number in that each of these verbal forms is generally associated with one VN pattern (e.g. the pattern |ʔiC$_1$tiC$_2$a:C$_3$| is typically used for deriving VNs from form VIII verbal stems of the shape |ja+C$_1$taC$_2$iC$_3$| like *ʔintixa:b* 'election' which is derived from *ja-ntaxib* 'he elects').

Different shades of meaning are commonly associated with the various VN patterns of form I verbal stems (cf. Abd Al-Ghani 2010, 146-148; Al-Samurrai 2013, 71). For instance, the pattern |C$_1$uC$_2$a:C$_3$| is mainly employed for deriving VN patterns that denote sickness (e.g. *su^{c}a:l* 'coughing'). Furthermore, the VN pattern |C$_1$aC$_2$aC$_3$a:n| usually indicates aspects related to continuous movement (e.g. *ɣalaja:n* 'boiling') and the VN Pattern |C$_1$aC$_2$i:C$_3$| regularly designates types of sounds (e.g. *zaʔi:r* 'roaring'). Consequently, a form I verbal stem can have more than one VN with each of them indicating a different shade of meaning. For instance, the imperfective verb *ja-zra^{c}* 'he plants' has two VN forms, i.e. *zira:^{c}ah* 'agriculture' and *zarc* 'planting'. Table 3.1 presents the frequencies of the initially, medially, finally and doubly weak VNs which are derived from triconsonantal verbal stems (form I) in the complied VN corpus.

Table 3.1: The frequencies of the initially, medially, finally and doubly weak VN patterns

	Pattern	Initially-weak VNs		Medially-weak VNs		Finally-weak VNs		Doubly-weak VNs		Total	
1	C$_1$aC$_2$C$_3$+an	76	36.7%	264	52%	159	35.4%	21	36.8%	522	42.7%
2	C$_1$uC$_2$u:C$_3$+an	31	15%	14	2.8%	39	8.7%	—	—	84	6.9%
3	C$_1$aC$_2$aC$_3$+an	21	10.1%	19	3.7%	40	8.9%	5	8.8%	85	7%
4	C$_1$aC$_2$a:C$_3$at+an	12	5.8%	—	—	18	4%	4	7%	34	2.8%
5	C$_1$iC$_2$C$_3$at+an	18	8.7%	10	2%	7	1.6%	3	5.3%	38	3.1%
6	C$_1$aC$_2$i:C$_3$+an	10	4.8%	—	—	3	0.7%	—	—	13	1%
7	C$_1$aC$_2$aC$_3$a:n+an	9	4.3%	56	11%	9	2%	—	—	74	6%
8	C$_1$aC$_2$a:C$_3$+an	6	2.9%	22	4.3%	43	9.6%	5	8.8%	76	6.2%
9	C$_1$uC$_2$C$_3$+an	6	2.9%	3	0.6%	10	2.2%	—	—	19	1.6%
10	C$_1$aC$_2$C$_3$at+an	4	1.9%	20	3.9%	18	4%	—	—	42	3.4%
11	C$_1$iC$_2$a:C$_3$at+an	4	1.9%	25	4.9%	19	4.2%	6	10.5%	54	4.4%
12	C$_1$iC$_2$C$_3$+an	3	1.4%	6	1.2%	—	—	2	3.5%	11	0.9%
13	C$_1$aC$_2$i:C$_3$at+an	2	1%	—	—	1	0.2%	—	—	3	0.2%
14	C$_1$aC$_2$aC$_3$at+an	2	1%			7	1.6%	—	—	9	0.7%
15	C$_1$iC$_2$C$_3$a:n+an	1	0.5%	—	—	5	1.1%	—	—	6	0.5%
16	C$_1$uC$_2$C$_3$a:n+an	1	0.5%	—	—	6	1.3%	—	—	7	0.6%
17	ma+C$_1$C$_2$iC$_3$at+an	1	0.5%	—	—	—	—	—	—	1	0.1%
18	C$_1$iC$_2$a:C$_3$+an	—	—	28	5.5%	21	4.7%	—	—	49	4%
19	C$_1$ajC$_2$C$_3$u:C$_3$at+an	—	—	10	2%	—	—	—	—	10	0.8%
20	C$_1$aC$_2$iC$_3$at+an	—	—	5	1%	—	—	—	—	5	0.4%
21	C$_1$uC$_2$u:C$_3$at+an	—	—	5	1%	4	0.9%	—	—	9	0.7%
22	C$_1$uC$_2$a:C$_3$+an	—	—	5	1%	8	1.8%	1	1.8%	14	1.1%
23	ma+C$_1$C$_2$aC$_3$+an	—	—	3	0.6%	—	—	—	—	3	0.2%

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24	ma+$C_1C_2aC_3$at+an	—	—	2	0.4%	—	—	—	—	2	0.2%
25	ti+ C_1C_2a:C_3+an	—	—	2	0.4%	—	—	—	—	2	0.2%
26	ta+ C_1C_2a:C_3+an	—	—	2	0.4%	—	—	—	—	2	0.2%
27	$C_1iC_2aC_3$+an	—	—	1	0.2%	9	2%	1	1.8%	11	0.9%
28	$C_1uC_2C_3$at+an	—	—	1	0.2%	8	1.8%	—	—	9	0.7%
29	$C_1iC_2u:C_3$+an	—	—	1	0.2%	—	—	—	—	1	0.1%
30	$C_1uC_2C_3$a:ʔ+an	—	—	1	0.2%	—	—	—	—	1	0.1%
31	$C_1aC_2a:C_3$ijat+an	—	—	1	0.2%	—	—	—	—	1	0.1%
32	ma+$C_1C_2iC_3$+an	—	—	1	0.2%	—	—	—	—	1	0.1%
33	$C_1uC_2i:C_3$+an	—	—	—	—	9	2%	9	15.8%	18	1.5%
34	$C_1uC_2aC_3$+an	—	—	—	—	4	0.9%	—	—	4	0.3%
35	$C_1iC_2i:C_3$+an	—	—	—	—	2	0.4%	—	—	2	0.2%
Total		207	100%	507	100%	449	100%	57	100%	1222	100%

As shown in Table 3.1, 1222 VNs are targeted in the current corpus, 507 of these VNs are medially-weak, 449 of them are finally-weak, 207 are initially-weak and 57 are doubly-weak. It can be noted that the /an/ suffix, which is composed of the accusative case suffix /a/ and the indefinite form maker /n/, is added to all the 35 the patterns of these VNs. This is ascribed to the observation that the VNs in dictionaries and grammar books, including the dictionary which serves as the source of data collection in this study, are regularly cited in the accusative case and the indefinite form.

In line with the general assumption that the most frequently used pattern for deriving VNs from form I triconsonantal verbs is |$C_1aC_2C_3$+an|, the most frequent VN pattern in the present corpus is |$C_1aC_2C_3$+an| and it accounts for 42.7% of the analyzed VN patterns (cf. Brame 1970, 273; Al-Faxiri 1996, 175-176). The second most frequent VN pattern is |$C_1aC_2aC_3$+an| which constitutes 7 % of the employed VN patterns. The wide difference between the first and second most frequent VNs validates the assumption that the most basic VN pattern of form I verbal stems is |$C_1aC_2C_3$+an|. Furthermore, in addition to |$C_1aC_2C_3$+an| and |$C_1aC_2aC_3$+an|, the VN patterns |$C_1iC_2C_3$at+an|, |$C_1iC_2a:C_3$at+an| and |$C_1aC_2a:C_3$+an| are the only patterns which are utilized for deriving initially, medially, finally and doubly weak VNs. On the other hand, the other VN patterns are not employed for deriving all the four types of VNs and some of them are only used for forming one type of VNs (e.g. the patterns |ti+ C_1C_2a:C_3+an| and |$C_1uC_2C_3$a:ʔ+an| are only used for deriving medially-weak VNs).

The following sections analyze each of the 35 patterns which are used for driving the targeted weak VNs. These sections are ordered in accordance with the similarity in the shape of the analyzed VN patterns. For instance, the VN patterns |$C_1aC_2C_3$+an|, |$C_1iC_2C_3$+an| and |$C_1uC_2C_3$+an| have the shape |$C_1VC_2C_3$+an|; hence they are discussed in consecutive sections.

3.2. The derivation of weak VNs of the pattern |$C_1aC_2C_3$+an|

The surface representations of the 76 initially-weak, the 264 medially-weak and the 159 finally-weak VNs of the pattern |$C_1aC_2C_3$+an|, which are listed in Table 5.1, Table 5.18 and Table 5.43 in the appendices, respectively, are of the same surface shape of the strong VNs that have this pattern (e.g. *na<u>s</u>r* 'victory'). Accordingly, the derivation of the surface representations of these weak VNs from their verbal stems only requires using the two rules that are utilized for forming their strong counterparts. The first rule is a morphologically-conditioned ablaut rule which changes the stem vowel of the verbal stem |CCVC| to /a/ (CCVC→ CCaC). The second rule is a phonologically-conditioned rule which metathesizes the /a/ vowel and the consonant that precedes it (CCaC→ CaCC).

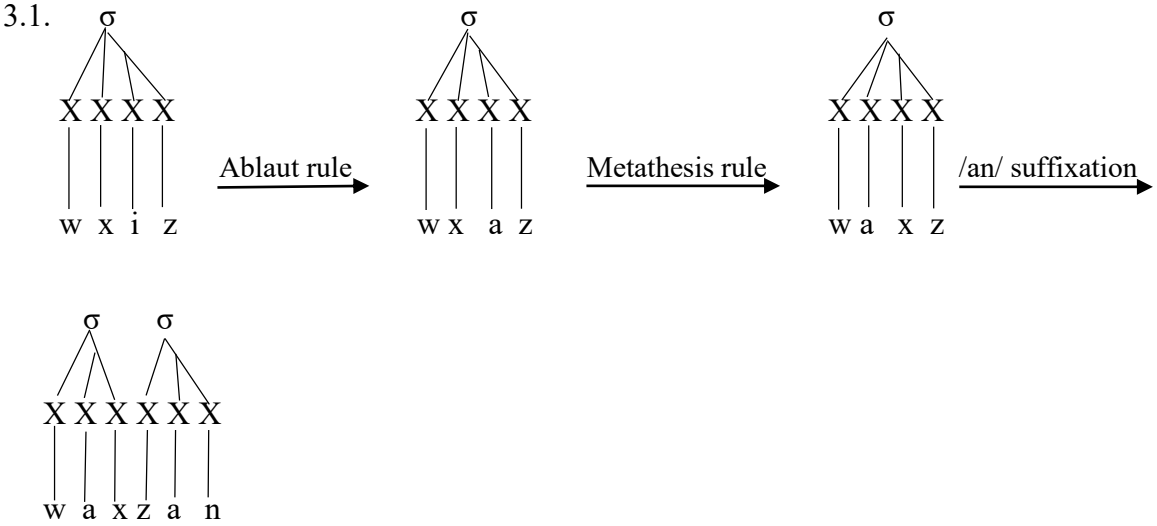
The metathesis rule is considered a phonologically-conditioned rule because it is applied to break up the consonant cluster which occurs in the onset position of the syllable in the VN pattern |**CC**aC|. That is, the imperfective stems, which serve as the basis for the derivation of VNs, are allowed to be of the shape **|CC**VC| because they are always preceded by a personal prefix that has a |CV| shape which enables re-syllabifying the first consonant in these stems as the coda of its preceding

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syllable (CV**.CC**VC→ CV**C.C**VC). On the other hand, the VN pattern |$C_1aC_2C_3$+an| does not have to be preceded by any prefixes; thus one can assume that its underlying representation is |$C_1C_2aC_3$+an|, which is produced through the application of an ablaut rule, and this representation surfaces as |$C_1aC_2C_3$+an| by a metathesis rule which is applied to avoid the occurrence of a complex onset.

The derivation of weak VNs that have the pattern |$C_1aC_2C_3$+an| from their verbal stems is exemplified by deriving the initially-weak VN *waxz-an* 'piercing, accusative/indefinite form' from *wxiz*, i.e. the stem of its imperfective verb *ja-xiz* 'he pierces', which involves changing the stem vowel /i/ to /a/ (*wx**i**z*→ *wx**a**z*) and metathesizing the latter and the consonant /x/ (*w**xa**z* → *w**ax**z*). Finally, the suffix /an/ is added to this verbal stem to derive its accusative/indefinite form (*waxz*→ *waxz-**an**)*. The autosegmental representation of this derivational process is depicted in 3.1.

3.1.



Akin to their initially-weak counterparts, the derivation of the surface representations of the medially-weak (e.g. ***ɣaj**θ-an* 'helping, accusative/indefinite form') and the finally-weak (e.g. *sal**w**-an* 'forgetting, accusative/indefinite form') VNs of the pattern |$C_1aC_2C_3$+an| only requires the application of the ablaut and metathesis rules to their verbal stems. As for the 21 doubly-weak VNs, which are shown in Table 5.66 in the appendices, they are divided into two categories. The first category is of the underlying shape |waC_2j+an| and the second category is of the underlying shape |C_1awj+an|.

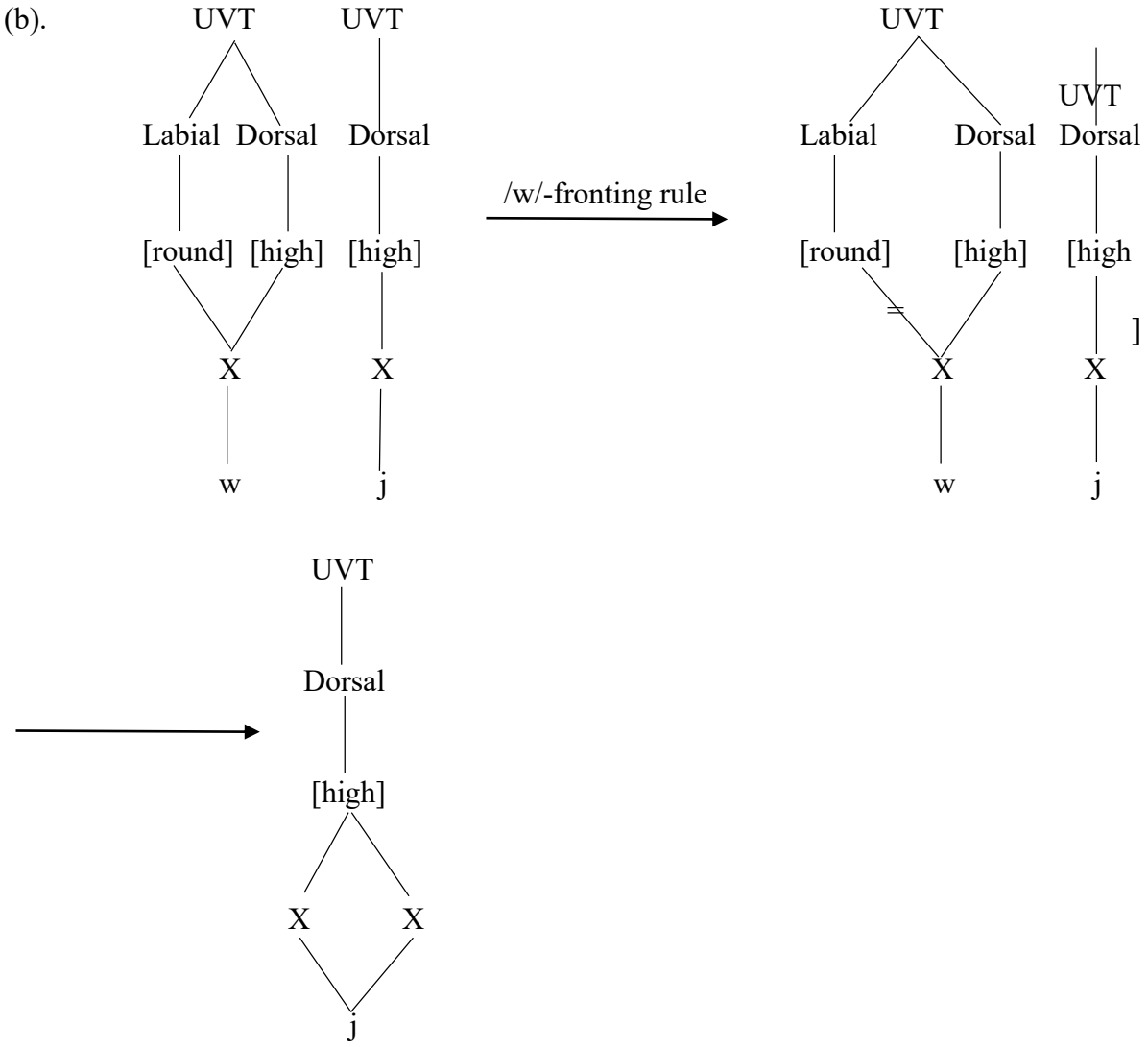
The 10 VNs which are of the underlying shape |waC_2j+an| exhibit the same derivational pattern of the other VNs of the pattern |$C_1aC_2C_3$+an| (e.g. ***wa**ᶜ**j**-an* 'awareness, accusative/indefinite form'). For example, deriving the VN *waḥj-an* 'inspiration, accusative/indefinite form' from *wḥij*, i.e. the underlying stem of the imperfective verb *jaḥi:* 'he inspires', involves applying the ablaut rule to change its stem vowel /i/ to /a/ (*wḥij* → *wḥaj*) and the metathesis rule to switch the place of the /a/ and the /ḥ/ (*wḥaj*→ *waḥj).* Afterwards, the suffix /an/ is added to *waḥj* 'inspiration' to derive its accusative/ indefinite form (*waḥj*→ *waḥj-an)*.

On the other hand, the formation of the surface representations of the 11 doubly-weak VNs that have the underlying shape |C_1awj+an| entails applying the /w/-fronting rule after the application of the ablaut and metathesis rules. The /w/-fronting rule, as stated in 3.2 (a), is a total assimilation rule that changes the /w/ to /j/ when it is preceded or followed by /j/ (Brame 1970, 453). The representation of the /w/-fronting rule in the feature geometry model is shown in 3.2 (b).

$$3.2\ (a).\ w \rightarrow j \,/ \begin{Bmatrix} -\ j \\ j\ - \end{Bmatrix}$$

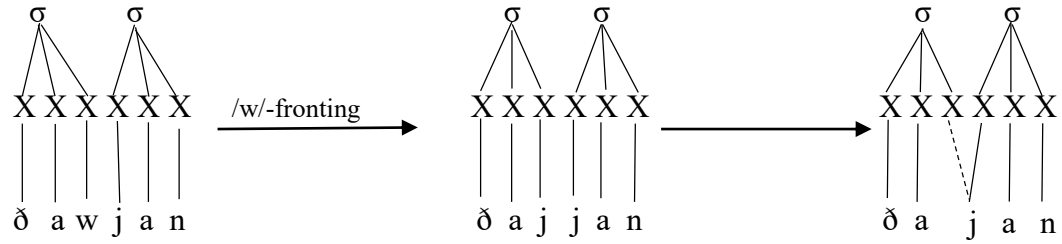
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(b).



As shown in 3.2 (b), the assimilation of the /w/ to the /j/ through the /w/-fronting rule is depicted in the feature geometry model by delinking the feature [round] from the former glide which results in changing it to the latter glide because these two glides differ only in this feature. This rule applies to all the doubly weak VNs of the underlying shape |C_1awj+an|, except for one, to derive their surface representations. The VN which does not undergo the /w/-fronting rule is *ða**wj**-an* 'withering, accusative/indefinite form'. Interestingly, this VN has another alternative form which undergoes this rule and surfaces as *ða**jj**-an* 'withering, accusative/indefinite form'. Consequently, the failure of *ða**wj**-an* to undergo the /w/-fronting rule cannot be attributed to a phonological reason; rather it can be identified as a form of free variation. The autosegmental representation of the derivation of *ða**jj**-an* from *ða**wj**-an* is shown in 3.3.

3.3.



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As shown in 3.3, two adjacent instances of the glide /j/ appear on the melody tier after the application of the /w/-fronting rule. The occurrence of identical adjacent elements on the melody tier is banned by the OCP. Consequently, these two adjacent instances of the glide /j/ are combined to form the long consonant, viz. the geminate, /j:/. Interestingly, the two X-slots to which the geminate /j:/ is attached belong to two different syllables. The first constitutes the coda of a syllable, whereas the second occupies the onset position of another syllable. Dividing the quantity of the geminate /j:/ between two syllables is ascribed to the observation that syllabifying this geminate as the coda of the first syllable causes the second syllable to become onsetless which is not allowed in MSA (**ðaj:an*) and syllabifying it as the onset of the second syllable is not possible because geminates cannot occur in syllable-onset-position in MSA (**ðaj.:an*) (cf. Brame 1970, Mahadin 1982).

3.3. The derivation of weak VNs of the pattern |$C_1iC_2C_3$+an|

The underlying representations of the 11 weak VNs of the pattern |$C_1iC_2C_3$+an| are formed by subjecting their verbal stems to the ablaut and metathesis rules and adding the accusative/indefinite form suffix /an/ to them (CCVC→ CC**i**C→ C**iC**C→ CiCC+**an**). The 3 initially-weak VNs of this pattern, as shown in Table 5.12 in the appendices, are *wizr-an* 'sin, accusative/indefinite form' and *wirθ-an* 'inheritance, accusative/indefinite form' which has the alternative surface form *ʔirθ-an*. The surface representations of *wizr-an* and *wirθ-an* are the same as their underlying representations, whereas *ʔirθ-an* has the underlying form *wirθ-an*.

The surface representation of the VN *ʔirθ-an* is derived from its underlying representation *wirθ-an* through the deletion of the /w/ by the /w/-deletion rule which stipulates that the /w/ is deleted when it is followed by a |C_2iC_3| sequence (Mahadin 1982, 273). The deletion of the /w/ causes this VN to become onsetless which is a violation of MSA syllable structure constraints; thus the glottal stop /ʔ/, which is commonly used as an epenthetic sound in MSA, is inserted to fill the empty onset position (*irθ-an*→ *ʔirθ-an*). It is worth indicating that no phonological motivations can posited for the failure of the /w/-deletion rule to apply to *wirθ-an* and *wizr-an* because there is an alternative form to the former which undergoes this rule, i.e. *ʔirθ-an,* and there are VNs of the pattern |$C_1iC_2C_3$at+an| which undergo this rule despite having similar radicals to the latter (see Section 3.13).

The formation of the surface representations of the 6 medially-weak VNs of the pattern |$C_1iC_2C_3$+an|, which are listed in Table 5.28 in the appendices, requires applying the glide assimilation rule, as presented in 3.4, after the application of the rules that derive their underlying representations. That is, applying the ablaut and metathesis rules derives the underlying representations of these VNs which are of the shape |C_1iGC_3+an|. The underlying glide in 5 of these VNs is /j/. The /ij/ sequence in |C_1**ij**C_3+an| meets the conditioning environment for the glide assimilation rule which involves the assimilation of the glides to their cognate vowels when they are preceded by these vowels (cf. Brame 1970, Mahadin 1982, Abushunar and Mahadin 2017, among others). The glide assimilation rule changes the sequences /ij/ and /uw/ to /ii/ and /uu/, respectively, when these sequences occur at the end of the word or when are followed by consonants specified for the feature [consonantal] (cf. Ali 2020).

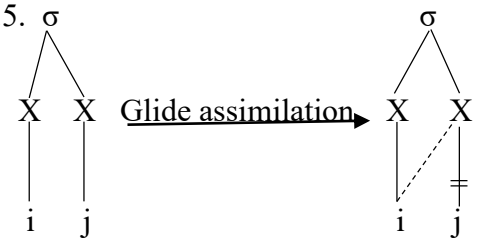
3.4. $\begin{Bmatrix} j \\ w \end{Bmatrix} \rightarrow \begin{Bmatrix} i \\ u \end{Bmatrix} / \begin{Bmatrix} i \\ u \end{Bmatrix} __ \begin{Bmatrix} C\ [\text{consonantal}] \\ \# \end{Bmatrix}$ (# designates word boundary)

As opposed to the /w/-fronting rule, the representation of the glide assimilation rule does not require utilizing the feature geometry model, because this rule assimilates a glide to its cognate vowel. A glide and its cognate vowel are phonetically similar; hence they have the same representation in the adopted model of feature geometry. The only difference between these two sounds is that the latter

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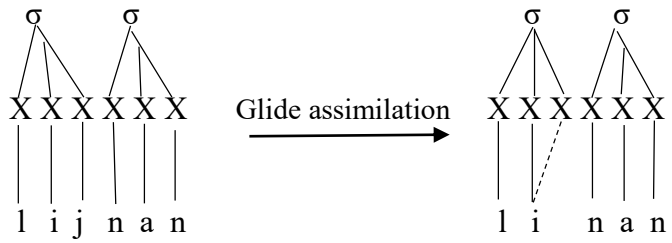
occupies the nucleus position of the syllable, whereas the former occupies a non-nucleus position, i.e. an onset or coda position. Consequently, assimilating a glide to its cognate vowel only requires delinking the glide from its non-nucleus position and attaching it to the nucleus position of its cognate vowel which results in forming a long vowel. This can be straightforwardly depicted in the X-slot model of autosegmental phonology. Changing the /ij/ sequence to /i:/ through the glide assimilation rule is depicted in in the X-slot model in 3.5.

3.5.



Undergoing the glide assimilation rule causes the sequence |C_1**ij**C_3+an| in these VNs to surface as |C_1**i:**C_3+an| and it derives their surface representations (e.g. l**ij**n-an →l**i:**n-an 'tenderness, accusative case' which is presented in 3.6).

3.6.



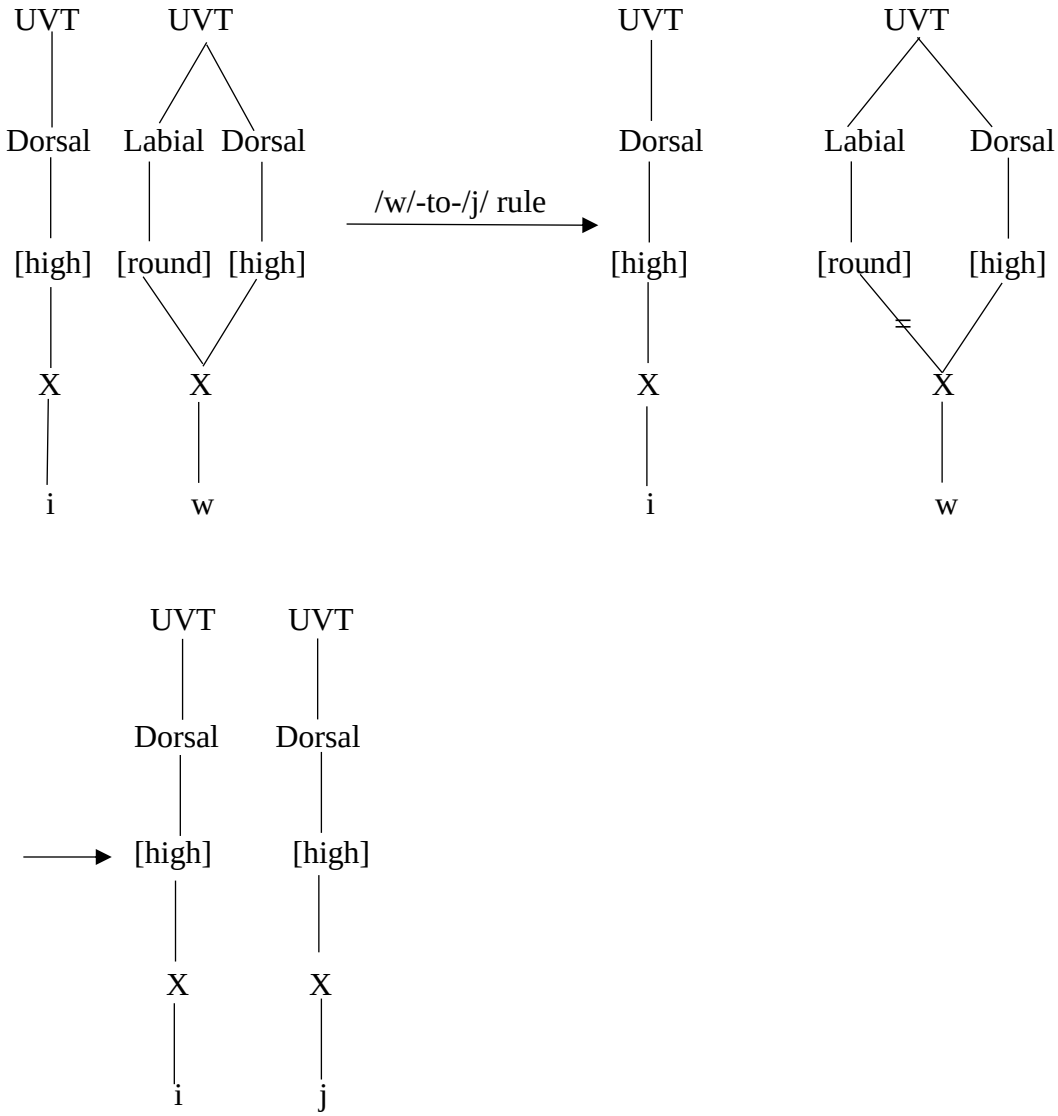
As opposed to these 5 VNs, the medially-weak VN *qi:l-an* 'talk, accusative/indefinite form' has the glide /w/ as its underlying glide. Consequently, its underlying representation is of the shape |C_1**iw**C_3+an|. The /iw/ sequence cannot undergo the glide assimilation rule because the /w/ is not the cognate glide of the /i/. Since the glide assimilation rule cannot apply to the sequence /iw/ because its two members are phonetically dissimilar, the /w/-to-/j/ rule, proposed by Brame (1970, 226), is employed to resolve the problem of the impermissible sequencing of the /i/ and /w/. This rule, as stated in 3.7, changes the /w/ to /j/ when it is preceded by /i/ and the /j/ to /w/ when it is preceded by /u/.

3.7. $\begin{Bmatrix} w \\ j \end{Bmatrix} \rightarrow \begin{Bmatrix} j \\ w \end{Bmatrix} / \begin{Bmatrix} i \\ u \end{Bmatrix} __$

As an instance of assimilation rules, the depiction of the application of the /w/-to-/j/ rule requires resorting to the feature geometry model of autosegmental phonology. The application of the /w/-to-/j/ rule to the sequence /iw/ in *qiwl-an* is represented within the feature geometry model in 3.8 where only the relevant features for the analysis are represented.

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3.8.



As presented in 3.8, the partial assimilation of the /w/ to the /i/ is an instance of assimilation in roundedness because the former is a rounded sound as opposed to the latter. Delinking the feature [round] from the /w/ changes it to /j/ because these two glides differ only in their roundedness in the adopted model of feature geometry. The application of the /w/-to-/j/ rule to *qiwl-an* changes it to *qijl-an*. Subsequently, the /ij/ sequence in *qijl-an* undergoes the glide assimilation rule which changes it to /i:/ (*qijl-an → qi:l-an)*.

It is necessary to point out that changing the medial /w/ to /j/ when it is preceded by the vowel /i/ in VN patterns such as |$C_1iC_2C_3$+an|, |$C_1iC_2C_3$at+an|, |$C_1iC_2a:C_3$+an| and |$C_1iC_2C_3a:n$+an| is considered an instance of *ʔalʔiᶜla:l bilqalb* by Arab grammarians like Ibin Jinni (1954, 348), Shahin (1980, 187), Ibin Asfor (1987, 495) and Al-Samurrai (2013, 228). However, *ʔalʔiᶜla:l bilqalb* is an instance of substitution and there are no substitutions of sounds in the adopted approach of nonlinear phonology (cf. Altakhaineh and Zibin 2014, Altakhaineh and Alshamari 2016). Consequently, the alternation between the /w/ and /j/ in these VN patterns are proposed to be caused by a phonetically-motivated rule which changes the former glide to the latter through its partial assimilation to its preceding vowel, i.e. the /i/ vowel.

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The 2 doubly-weak VNs of the pattern |$C_1iC_2C_3$+an| are presented in Table 5.72 in the appendices. These two VNs, i.e. *ᶜijj-an* 'incapability, accusative/indefinite form' and *rijj-an* 'quenching, accusative/indefinite form', are of the shape |$C_1iG_2G_3$+an| which indicates that there are glides in their medial and final positions. As expected, neither of these VNs undergoes the glide assimilation rule, as stated in 3.4, because the |iG| sequence in them is followed by a glide which is a consonant that is not specified for feature [consonantal] (Spencer 1996, 141). The underlying and surface representations of the VN *ᶜijj-an* are derived by applying the ablaut and metathesis rule to its verbal stem *ᶜajj* and adding the /an/ suffix to the resultant form. In contrast with *ᶜijj-an*, the VN *rijj-an* has an underlying representation which is different from its surface representation. That is, the application of the ablaut and metathesis rules to the verbal stem *rwij* derives its underlying form *riwj-an*. This form is subjected to the /w/-fronting rule, as presented in 3.2, which totally assimilates the /w/ to its following /j/ and derives *rijj-an* from *riwj-an.*

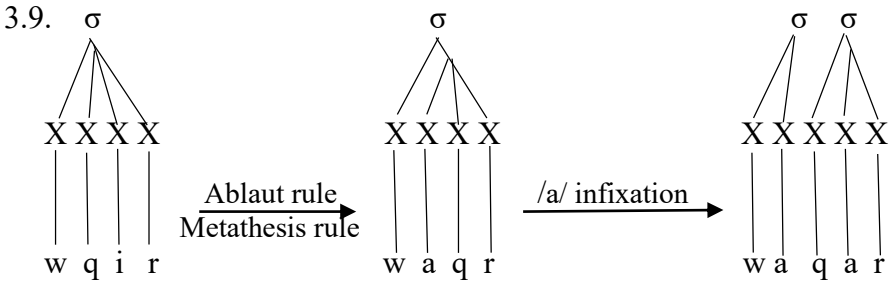
3.4. The derivation of weak VNs of the pattern |$C_1uC_2C_3$+an|

The 6 initially-weak and the 10 finally-weak VNs of the pattern |$C_1uC_2C_3$+an|, as listed in Table 5.9 and Table 5.51 in the appendices, respectively, are formed by the application of the ablaut and metathesis rules to their verbal stems and the suffixation of /an/ to the resultant forms. For instance, the finally-weak VN *luqj-an* 'encountering, accusative/indefinite form' is formed by applying the ablaut and metathesis rules to its verbal stem *lqaj* which yields *luqj* 'encountering'. Afterwards, the suffix /an/ is added to *luqj* to derive its accusative/ indefinite form. As for the 3 medially-weak VNs of this pattern, which are presented in Table 5.33 in the appendices, deriving them from their verbal stems requires applying the glide assimilation rule after the rules that derive their initially and finally weak counterparts. This can be exemplified by deriving the VN *dʒu:d-an* 'lavishness, accusative/indefinite form' from its verbal stem *dʒwud*. The application of the ablaut, metathesis and suffixation processes to this verbal stem derives *dʒuwd-an*. The /uw/ sequence in *dʒ**uw**d-an* undergoes the glide assimilation rule, as stated in 3.4, which changes this sequence to /u:/ and causes this VN to surface as *dʒu:d-an*.

3.5. The derivation of weak VNs of the pattern |$C_1aC_2aC_3$+an|

The 21 initially-weak VNs which are listed in Table 5.3 have the pattern |$C_1aC_2aC_3$+an|. These VNs are derived by applying the ablaut (GC**V**C→GC**a**C) and metathesis rules to their verbal stems (G**Ca**C→G**aC**C), inserting the infix /a/ between their second and third consonants (GaCC→GaC**a**C) and attaching the inflectional suffix /an/ to them (GaCaC→GaC**a**C-an). Deriving the VN *waqar-an* 'deafness, accusative/indefinite form' from its corresponding verbal stem *wqir*, i.e. the stem of the imperfective verb *ja-qir* 'he becomes deaf', is employed as an illustrative example in 3.9.

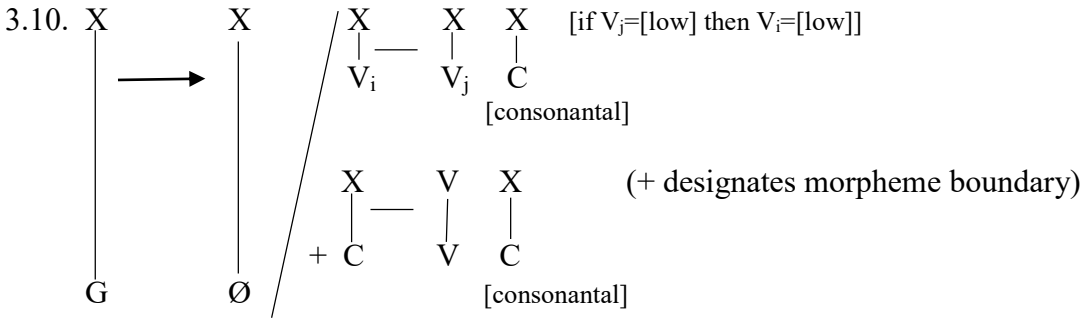
3.9.



The derivation of the 19 medially-weak VNs of this pattern, which are shown in Table 5.24 in the appendices, follow the same steps which are employed for forming their initially-weak counterparts. The glide in the underlying shape of these VNs, viz. |CaGaC+an|, occurs in an

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intervocalic position between two identical /a/ vowels. Hence, it should be deleted through the application of the glide elision rule, which is taken from Ali (2020, 114) and stated in 3.10.



Based on this rule, the glide which occurs between two vowels |V**G**V| undergoes the elision rule when the second vowel in this sequence is followed by a consonant specified for the feature [consonantal] except for the glides which are preceded by high vowels and followed by low vowels (cf. Brame 1970). The glide is also deleted when it occurs in a |C**G**V| sequence which is preceded by a morpheme boundary if the vowel in this sequence is followed by a [consonantal] consonant and the only consonants that lack specification for this feature are the glides (cf. Spencer 1996).

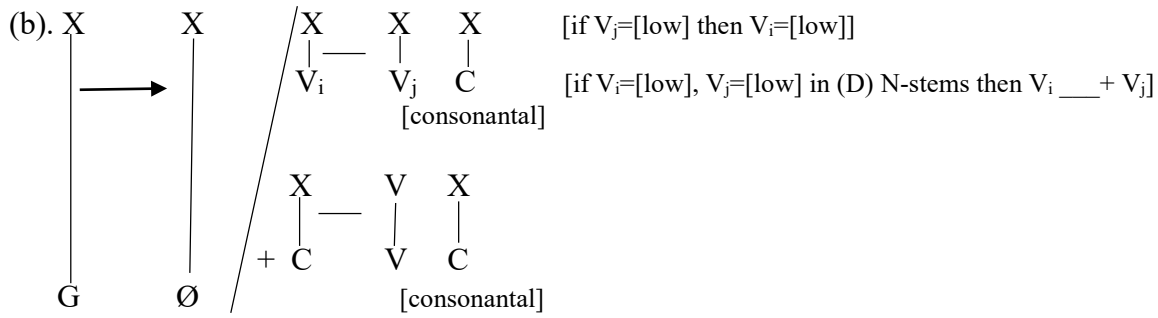
However, the glide in these VNs does not undergo the elision rule and it appears in their surface representations (e.g. *ha**w**as-an* 'obsession'). Resolving this inconsistency requires indicating that in all the cited instances of glide elision in derived nominal forms, the glide is not deleted if the |aGa| sequence constitutes a part of their stems. That is, the glide in |aGa| sequences in these forms is deleted only if it occurs in the final position of their stems and its following /a/ vowel occupies the initial position of the suffixes which are attached to these stems (cf. Brame 1970, Mahdain 1982). This is observed to be true for derived nominal forms but the |aGa| sequences which are parts of the stems of verbal forms (e.g. *n**a**wa**w**am→ n**a:**m* 'he slept') and non-derived nominal forms (e.g. *b**a**wa**w**ab→ b**a:**b* 'door') are found to undergo the glide elision rule. One can attribute the stability of certain |aGa| sequences to the assumption that the low vowel /a/ has no cognate glide and this delimits its interaction with its adjacent glides.

The glide elision rule which targets the |aGa| sequences in derived nominal stems is stated in 3.11 (a). This rule deletes the glides in derived nominal stems ((D) N-stems) when they are followed by a morpheme boundary and surrounded by two instances of /a/ vowel. Consequently, the medially-weak VNs of the pattern |C**a**C**a**C+an| do not undergo this rule because their medial glides are not followed by a morpheme boundary which entails that they do not occur in the final position of the stem.

The glide elision rule in 3.11 (a) can be integrated with the glide elision rule in 3.10 by introducing an additional modification to the first conditioning environment of the latter rule. This modification involves stipulating that the glide in the |aGa| sequences which occur in (D) N-stems is subjected to the glide elision rule if its following /a/ vowel is followed by a morpheme boundary. The re-statement of the glide elision rule with the additional modification to its first conditioning environment is presented in 3.11 (b).

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3.11. (a). G→Ø / a___+ a [(D) N-stems] (+ designates morpheme boundary)



The 40 finally-weak VNs of this pattern, which are presented in Table 5.45 in the appendices, have underlying representations of the shape |CaCaG+an| and surface representations of the shape |CaC+an|. The underlying representations of these VNs undergo the glide elision rule, as stated in 3.11 (b), because their final glide is placed in an intervocalic position between two /a/ vowels and is followed by a morpheme boundary (CaC**aG**+**a**n→ CaCa+an). The two adjacent /a/ vowels in the resultant form violate the OCP; hence they are merged into the single long vowel /a:/ (CaC**a**+**a**n→ CaC**a:**+n).The long vowel /a:/ in |CaC**a:**+n| is subjected to the vowel shortening rule which, as adopted from Brame (1970, 91) and presented in 3.12, shortens long vowels when they are followed by one consonant which occurs in the final position of the word.

3.12. V: → V/ _____ C # (# designates the word boundary)

A modification to this rule based on its employment in the literature can be implemented. That is, the stems which are believed to undergo the vowel shortening rule in the literature are found to be followed by a suffix which consists of one consonant (cf. Brame 1970 and Mahadain 1982). In other words, the consonant which follows the long vowels which are targeted by this rule is not part of the stem but part of a suffix which is added to the stem. Illustrative examples are presented in 3.13:

3.13: a. *da:^{c}i:-**n*** → *da:^{c}i-**n***‘a caller’ (the /n/ is the indefinite suffix)

b. *rama:-**t*** → *rama-**t*** ‘she threw’ (the /t/ is the feminine suffix)

On the other hand, the long vowels which are followed by a consonant which is considered part of the stem are not affected by the vowel shortening rule (e.g. *ma-ktu:b* ‘written’ and *qurra:?* ‘readers’). In sum, all the long vowels that are subjected to this rule are followed by a consonant which is preceded by a morpheme boundary and followed by a word boundary. Based on this observation, the vowel shortening rule can be restated in 3.14.

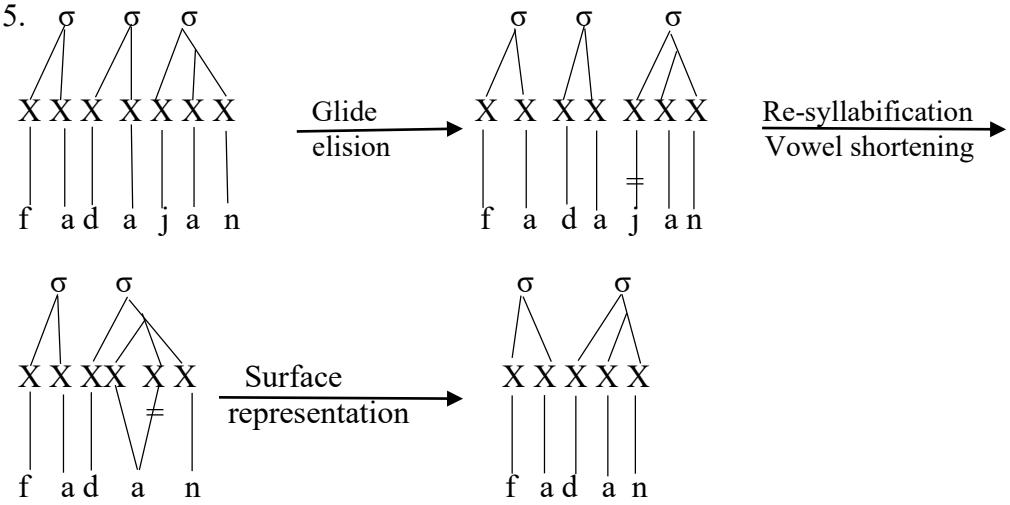
3.14. V: → V/ _____ +C# (+ and # designate the morpheme and word boundaries, respectively)

The vowel shortening rule applies to the long vowel /a:/ in |CaC**a:**+n| because this vowel is followed by the indefiniteness suffix /n/ which is preceded by a morpheme boundary and followed by a word boundary (CaC**a:**+n→ CaC**a**+n) (e.g. *fada:+n→ fada-n* ‘sacrificing, accusative/indefinite form’). As can be noted, the stems of these VNs appear to be biconsonantal but they are underlyingly triconsonantal. This serves as an additional confirmation to the hypothesis that there are no biconsonantal stems in MSA underlying representations and that these stems surface as biconsonantal stems through the application of certain phonological rules (cf. Brame 1970, Mahadin 1980). Proposing that the underlying representations of these biconsonantal VNs are triconsonantal, akin to their strong counterparts, enables accounting for their apparent irregular shapes and providing a more

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comprehensive account of the VNs of this pattern. The autosegmental representation of the derivation of the surface representation |CaCa+n| from its underlying representation |CaCaG+an| is exemplified by deriving *fada-n* 'sacrificing, accusative/indefinite form' from *fadaj-an* which is depicted in 3.15.

3.15.



The derivation of the surface representations of the 5 doubly-weak VNs, as listed in Table 5.69 in the appendices, of this pattern resembles that of their medially and finally weak counterparts. Accordingly, the medial glide of these VNs does not undergo the glide elision rule because it is part of their stems, whereas the final glide undergoes this rule. For instance, the doubly-weak VN *hawa-n* 'passion, accusative/indefinite form' is derived from its underlying representation *hawaj-an* by applying the glide elision rule to its final glide, i.e. the /j/ (*hawa**j**-an* → *hawa-an*), merging the two adjacent /a/ vowels into the long vowel /a:/ (*haw**a**-**a**n*→ *haw**a**:-n*) and applying the vowel shortening rule to this long vowel (*haw**a**:-n*→ *haw**a**-n*).

3.6. The derivation of weak VNs of the pattern |$C_1iC_2aC_3$+an|

There are one medially-weak, 9 finally-weak and one doubly-weak VNs of the pattern |$C_1iC_2aC_3$+an|. These are listed in Table 5.37, 5.54 and Table 5.75 in the appendices, respectively. Similar to their counterparts of the pattern |$C_1aC_2aC_3$+an|, the derivation of the underlying representation of these VNs involves applying the ablaut (CC**V**C→CC**i**C) and metathesis rules to their verbal stems (C**Ci**C→ C**i**CC) and adding the infix /a/ (CiCC →CiC**a**C) and the suffix /an/ to them (CiCaC→CiCaC-**an**). The surface representation of the one medially-weak VN of this pattern, i.e. *ᶜiwadʒ-an* 'contortion, accusative/indefinite form', is the same as its underlying representation. Contrastively, the surface representations of the finally and doubly weak VNs of this pattern are derived from their underlying representations through the deletion of their final glide and the shortening of the resultant long vowel.

This can be exemplified by deriving the surface representation of the finally-weak VN *ɣina-n* 'richness, accusative/indefinite form' from it underlying representation *ɣinaj-an*. Firstly, the /j/ in *ɣina**j**-an* undergoes the glide elision rule, which is stated in 3.11 (b), because it meets its conditioning environment (*ɣina**j**-an*→ *ɣina-an*). Secondly, the two adjacent /a/ vowels become the single long vowel /a:/ to avoid the violation of the OCP (*ɣina**-a**n*→ *ɣina**:**-n*). Finally, the long vowel /a:/ is shortened by the application of the vowel shortening rule which is stated in 3.14 (*ɣina**:**-n*→ *ɣina**-n*).

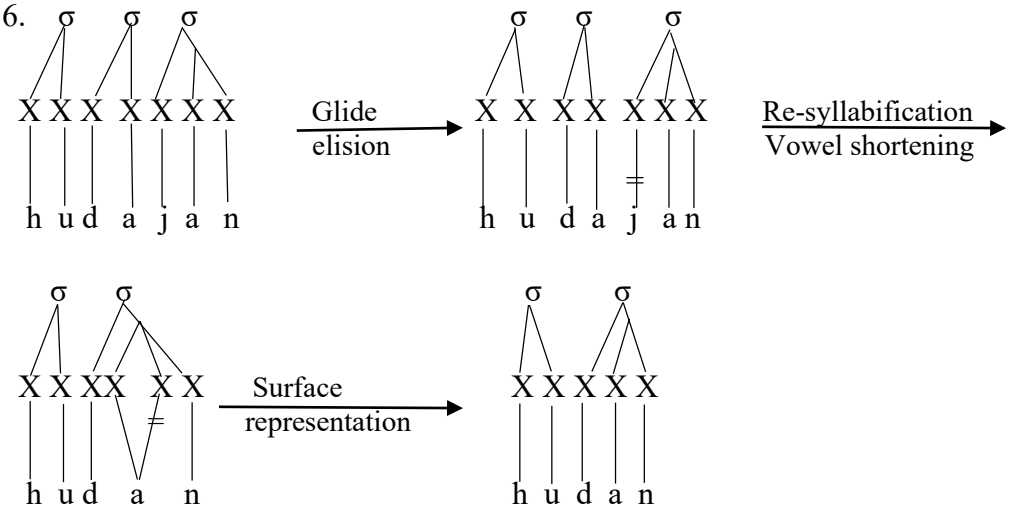
3.7. The derivation of weak VNs of the pattern |$C_1uC_2aC_3$+an|

Forming the 4 finally-weak VNs of the pattern |$C_1uC_2aC_3$+an|, which are presented in Table 5.62 in the appendices, involves applying the same derivational processes that are employed for the formation of the finally-weak VNs of the patterns |$C_1aC_2aC_3$+an| and |$C_1iC_2aC_3$+an|. For example, the

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finally-weak VN *huda-n* 'guidance, accusative/indefinite form' is formed through the application of the ablaut and metathesis rules to it verbal stem *hdij*, i.e. the stem of its corresponding imperfective verb *ja-hdi:* 'he guides', which generates the sequence *hudj.* Afterwards, the infix /a/ and the suffix /an/ are added to this sequence (*hudj→ huda**j**-**an***). The glide /j/ in the underlying representation of this VN undergoes the glide elision rule (*huda**j**-an→ huda-an).* The two short adjacent / a/ vowels become the single long vowel /a:/ (*huda**-a**n→ huda**:-n***) and this vowel is subsequently subjected to the vowel shortening rule (*huda**:-n** → huda**-n***). The autosegmental representation of the derivation of the surface representation of the VN *huda-n* from its underlying representation is depicted in 3.16.

3.16.



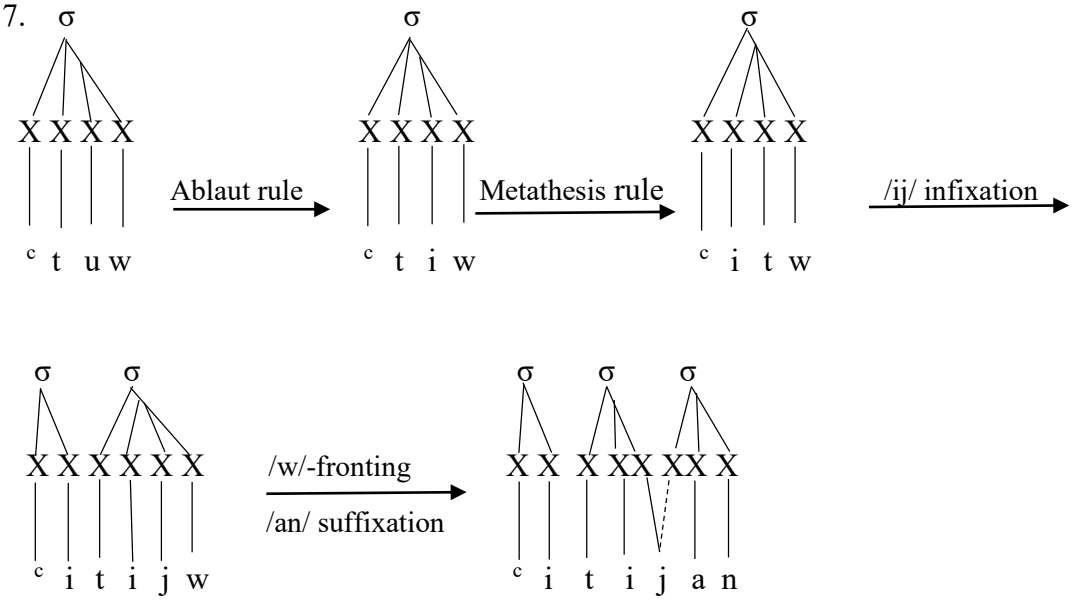
3.8. The derivation of weak VNs of the pattern |$C_1iC_2i:C_3$+an|

The two weak VNs of the pattern |$C_1iC_2i:C_3$+an| are the finally-weak VNs *silijj-an* 'forgetfulness, accusative/indefinite form' and *ᶜitijj-an* 'excessiveness, accusative/indefinite form' which are listed in Table 5.64 in the appendices. The underlying representations of these VNs are derived through the application of the ablaut and the metathesis rules to their verbal stems and the addition of the infix /ij/ and the suffix /an/ to them. For example, the verbal stem of the VN *ᶜitijj-an*, i.e. *ᶜtuw*, undergoes the ablaut (*ᶜtuw→ ᶜtiw*) and the metathesis rules (*ᶜtiw→ ᶜitw*). Subsequently, the infix /ij/ (*ᶜitw→ ᶜitijw*) and the suffix /an/ (*ᶜitijw→ ᶜitijw-**an***) are added to the resultant sequence. The underlying representation of this VN, i.e. *ᶜitijw-an*, surfaces as *ᶜitijj-an* because the underlying /w/ in the former representation is subjected to the /w/-fronting rule, as stated in 3.2 (a) (*ᶜitij**w**-an→ ᶜitij**j**-an*).

It should be noted that the surface representations of these two VNs are of the shape |C_1iC_2ijj+an| instead of |$C_1iC_2i:C_3$+an|, which is the surface shape of their strong counterparts, because the infix /ij/ in these VNs is not targeted by the glide assimilation rule, as stated in 3.4. The glide assimilation rule affects the /ij/ and /uw/ sequences and changes them to /i:/ and /u:/, respectively, when they occur in the final position of the word or when they are followed by a non-glide consonant. i.e. a consonant specified for the feature [consonantal]. As can be observed, the infix /ij/ in these VNs is followed by a glide; thus it does not undergo the glide assimilation rule and it retains its underlying form. The autosegmental representation of the derivation of *ᶜitijj-an* from its verbal stem *ᶜtuw* is depicted in 3.17.

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3.17.



3.9. The derivation of weak VNs of the pattern |$C_1uC_2i:C_3$+an|

The underlying representations of the VNs of the pattern |$C_1uC_2i:C_3$+an| are formed through the application of the ablaut rule which changes the stem vowel of their verbal stems to /u/ (CC**V**C→ CC**u**C) and the metathesis rule which switches the positions of the stem vowel and the consonant that precedes it (C**Cu**C→ C**uC**C). Afterwards, the infix /ij/ is inserted between the second and third consonants of the resultant sequence (CuCC→ CuC**ij**C) and the suffix /an/ is added to the derived stems to decline them for their accusative/indefinite form (CuCijC→ CuCijC-**an**).

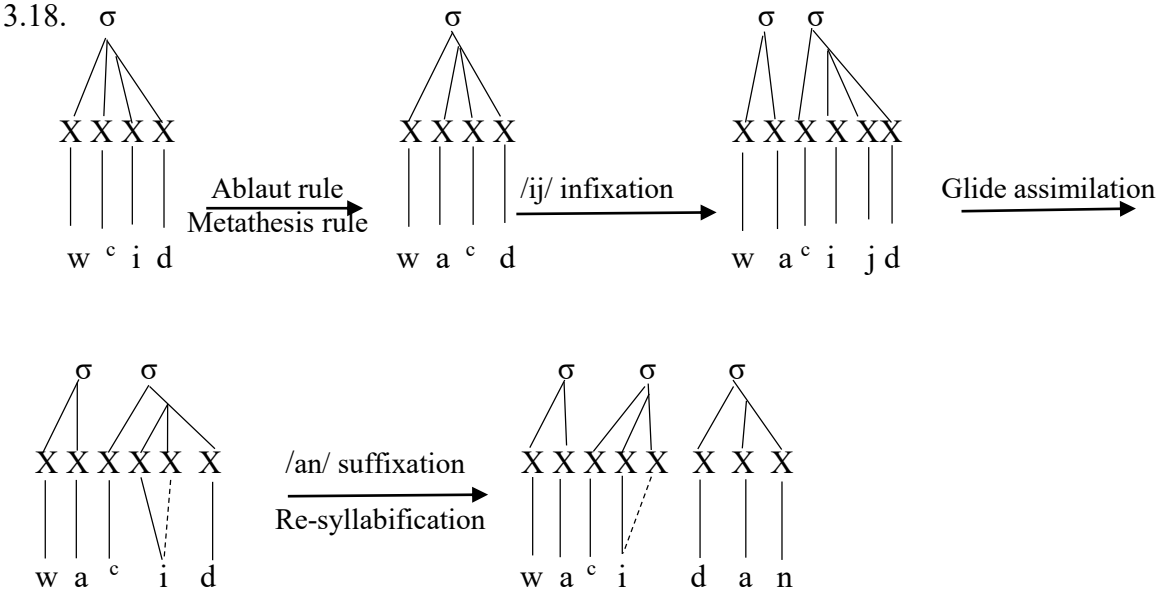
In the current corpus of VNs, there are 9 finally-weak and 9 doubly-weak VNs of this pattern. These VNs are listed in Table 5.53 and Table 5.67 in the appendices, respectively. The third radical of the finally and doubly weak VNs of this pattern is a glide (C_1uC_2ij**G**+an); thus the infix /ij/ in them is not subjected to the glide assimilation rule. For instance, the underlying representation of the doubly-weak VN *xuwijj-an* 'emptiness, accusative form' is the same as its surface representation because the infix /ij/ in this VN is followed by the glide /j/ which results in preventing it from undergoing the glide assimilation rule.

3.10. The derivation of weak VNs of the pattern |$C_1aC_2i:C_3$+an|

The underlying representations of the VNs that have the pattern |$C_1aC_2i:C_3$+an| are formed through the same derivational processes which are employed for forming their counterparts of the patterns |$C_1iC_2i:C_3$+an| and |$C_1uC_2i:C_3$+an|.The three finally-weak VNs of this pattern, which are listed in Table 5.63 in the appendices, are of the surface shape |CaCijG-an| (e.g. **ɣaʃijj**-an 'darkening, accusative/indefinite form') because their /ij/ infix is followed by a glide which prevents changing it to /i:/ through the glide assimilation rule. On the other hand, the 10 initially-weak VNs of this pattern, which are presented in Table 5.6 in the appendices, undergo the glide assimilation rule because the /ij/ infix in them is followed by a non-glide consonant (GaC**ij**C→ GaC**i:**C). The derivation of the initially-weak VNs of the pattern |$C_1aC_2i:C_3$+an| from their verbal stems is exemplified by the derivation of *wa^{c}i:d-an* 'promising' from *w^{c}id* which is depicted in 3.18.

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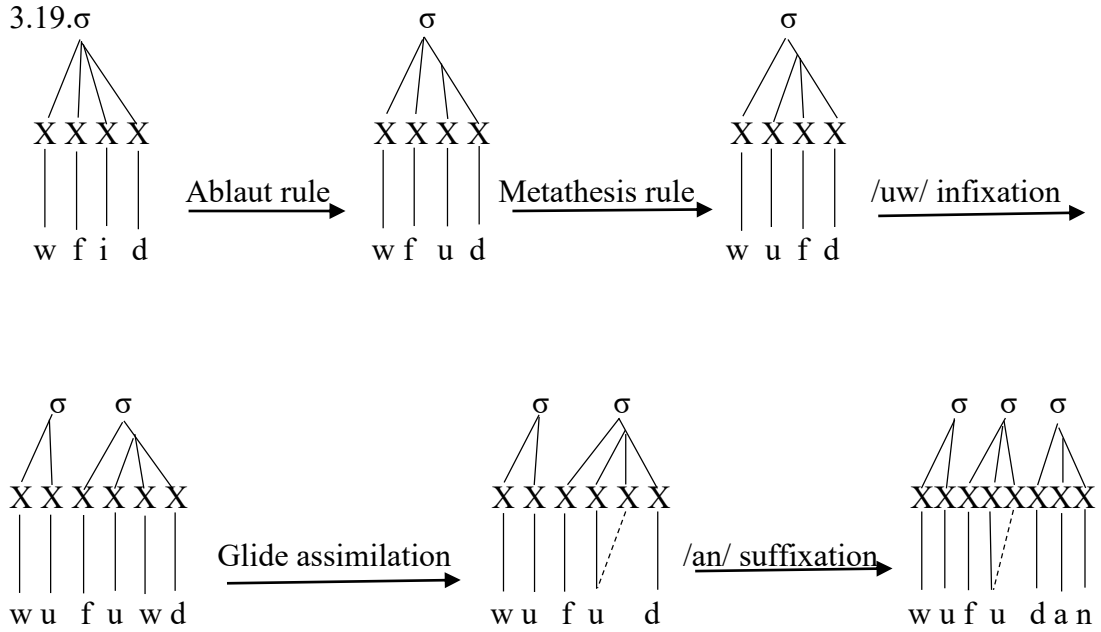
3.18.



3.11. The derivation of weak VNs of the pattern |$C_1uC_2u:C_3$+an|

The 31 initially-weak VNs which have the pattern |$C_1uC_2u:C_3$+an| are listed in Table 5.2. The derivation of these VNs involves, akin to their strong counterparts, applying the ablaut rule to change the stem vowel of their verbal stems to /u/. Subsequently, the metathesis rule switches the places of the stem vowel and its preceding consonant (C**Cu**C→ C**uC**C). Afterwards, the infix /uw/ is inserted between the second and third consonants of the stem (CuCC→ CuC**uw**C). This infix meets the conditioning environment for the glide assimilation rule which triggers the assimilation of its second member to its first member and results in forming the long vowel /u:/ (CuC**uw**C→ CuC**u:**C). Assuming that the long vowel /u:/ is underlyingly composed of the short vowel /u/ and its cognate glide /w/ is attributed to the appearance of the underlying sequence /uw/ in the finally-weak VNs of this pattern as will be shown shortly. The representation of the derivation of the VN *wufu:d-an* 'arriving/indefinite form' from *wfid,* as depicted in 3.19, is used as an illustrative example of the derivation of the initially-weak VNs of this pattern from their verbal stems.

3.19.



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In addition to the 31 initially-weak VNs of the pattern |CuCu:C+an|, there are 14 medially-weak VNs and 39 finally-weak VNs of this pattern. These are shown in Table 5.25 and Table 5.46 in the appendices, respectively. In accordance with the identity of the medial glide in their verbal stems, the medially-weak VNs of this pattern fall into two categories. The first category which has the /j/ as it medial glide follow the same derivational pattern of the initially-weak VNs. For instance, forming the VN *ʃuju:^{c}-an* 'spreading, accusative/indefinite form' from its verbal stem *ʃji^{c}* involves applying the ablaut and metathesis rules which forms *ʃuj^{c}*. The glide assimilation rule is then applied to the infix /uw/ which is added to *ʃuj^{c}* and this derives *ʃuju:^{c}* 'spreading'. Finally, the suffix /an/ is attached to *ʃuju:^{c}* to derive its accusative/ indefinite form *ʃuju:^{c}-an*.

As for the 5 medially-weak VNs that have the glide /w/ in their medial position, an additional rule is required for deriving their surface representation. That is, the application of the ablaut, metathesis, affixation and glide assimilation processes to these medially-weak VNs derives forms of the shape |Cuwu:C+an|. The /w/ in these forms surface as the glottal stop /ʔ/ and hence the surface representations of these VNs are of the shape |CuʔuːC+an| (e.g.*ruʔu:b-an* 'uncertainty, accusative/ indefinite form').

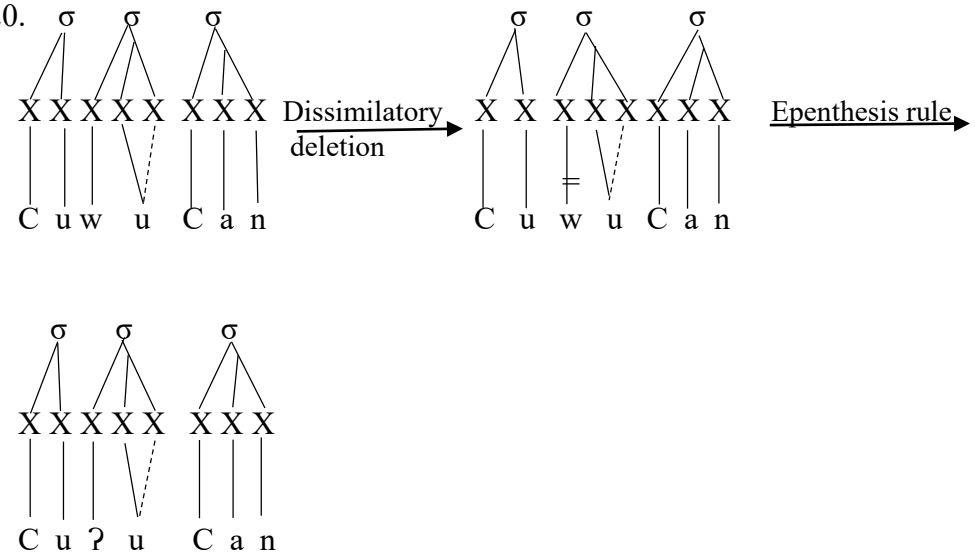
As can be noticed the /w/ in |C**uwu:**C+an| occurs between two instances of its cognate vowel /u/. Consequently, all the three members in the sequence /uwu:/ are phonetically similar which triggers the application of a dissimilation rule. Dissimilation rules are utilized for breaking the sequences of phonetically similar sounds due to the difficulty of their articulation (cf. Jensen 2004, 55; Durand 2014, 80). This can be done in two ways. The first is changing the feature specifications of a sound in phonetically similar sequences to make it less similar to its adjacent sounds and the second is eliminating a sound from these sequences.

In autosegmental phonology, dissimilation through changing the feature specifications of a sound is modeled as delinking a feature which is identical to an adjacent feature on a particular tier (cf. McCarthy and Smith 2003, 323). Consequently, the source and target of dissimilation rules are generally different in one feature in that delinking this feature changes the source of this process to its target. For example, dissimilation rules frequently dissimilate the /l/ to /r/ and the /m/ to /n/ because one feature is only used for distinguishing each of these pairs of sounds. That is, delinking the feature [lateral] from the /l/ changes it to /r/ and delinking the labial node of the /m/ changes it to /n/. Since the /w/ is phonologically distant from the /ʔ/, changing the former to the latter requires delinking a number of features, such as labial and dorsal, which affects the naturalness of this dissimilation process.

Turning the /w/ in the sequence /uwu:/into/ʔ/ can be accounted for by proposing that the application of the dissimilation rule to this sequence results in the deletion of its medial member, i.e. the /w/. The deletion of the /w/ causes its syllable to become onsetless which is not allowed in MSA. Therefore, the /ʔ/ is inserted to function as the onset of the onsetless syllable because this sound is commonly used to be fill empty onset positions in MSA (cf. Shahin 1980, Al-Nuri 2007). The application of the dissimilatory deletion and the glottal epenthesis rule to derive |CuʔuːC+an| from |Cuwu:C+an| is shown in 3.20.

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3.20.



As opposed to their medially-weak counterparts, the surface representations of the 39 finally-weak VNs of this pattern are the same as their underlying representations. The formation of these VNs involves applying the ablaut and metathesis rules to their verbal stems, which are all of the shape |CCVw|, and adding the infix /uw/ and the suffix /an/ to them. This is exemplified by deriving the VN *sumuww-an* 'rising up, accusative/indefinite form' from its verbal stem *smuw* by metathesizing the /u/ and the /m/ (s**mu**w→ s**um**w), inserting the infix /uw/ between the /m/ and /w/ *(sumw→ sum**uw**w)* and attaching the suffix /an/ to it *(sumuww →sumuww-**an**).*

It should be pointed out that all the verbal stems of the finally-weak VNs of this pattern, except for *dhaw* which is the verbal stem of the VN *duhuwwan* 'being in the forenoon', do not undergo the ablaut rule in the course of deriving their VN forms because their stem vowel, i.e. /u/, is the same as the stem vowel of this VN pattern. Moreover, these VNs are not subjected to the glide assimilation rule because the /uw/ sequence in them is followed by a glide.

3.12. The derivation of weak VNs of the pattern |C₁iC₂u:C₃+an|

There is one weak VN of the pattern |C_1iC_2u:C_3+an|. This VN, as presented in Table 5.39 in the appendices, is *ziju:h-an* 'displacing, accusative/indefinite form'. To derive *ziju:h-an* from *zjih*, i.e. the stem of its corresponding imperfective verb *ja-zi:h* 'he displaces', the vowel metathesis rule is first applied to switch the positions of the stem vowel and the consonant that precedes it (*zjih→ zijh*). Subsequently, the infix /uw/ is inserted between its second and third consonants (*zijh→ zijuwh*). This infix undergoes the glide assimilation rule and surfaces as /u:/ (*zijuwh→ ziju:h*). Finally, the suffix /an/ is added to this VN stem to derive its accusative/indefinite form (*ziju:h→ ziju:h*-an).

3.13. The derivation of weak VNs of the pattern |C₁iC₂C₃at+an|

The first radical of the 17 initially-weak VNs of the pattern |C_1iC_2C_3at+an|, which are listed in Table 5.4 in the appendices, is /w/. The underlying representations of these VNs are derived through subjecting their verbal stems to the ablaut and metathesis rules (CCVC→CC**i**C→C**i**CC). Afterwards, the suffix /at/, which is an integral part of this VN pattern, is added to |CiCC| to form |CiCC**at**| and the inflectional suffix /an/ is added to the resultant VN stem to derive its accusative/indefinite form |CiCCat+**an**|.

The underlying and surface representations of the initially-weak VN *wifrat-an* 'abundance, accusative/indefinite form' are both of the shape |wiC_2C_3at+ an|. On the other hand, the other 16 initially-weak VNs which have the underlying pattern |wiC_2C_3at+an| are of the surface shape |C_2iC_3at+an| (e.g. *wiznat-an →zinat-an* 'weight, accusative/indefinite form'). The deletion of the initial

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/w/ of the VNs that have the underlying shape |wiC$_2$C$_3$at+an| was indicated by Ibin Jinni (1957, 197) and Ibin Asfor (1987, 426) who attributed it to the occurrence of the letter /w/ in the initial position of a VN followed by the vocalic diacritic /i/. Consequently, the /w/ is deleted and its vocalic diacritic, i.e. the /i/, is moved to its following consonant through *ʔalʔiᶜla:l binnaql* which involves transporting the vocalic diacritic of a letter to another letter.

However, assuming that the /w/ is deleted because it occurs in the initial position of a VN and it is followed by the /i/ sound is not accurate. This is ascribed to the observation that there are many instances of /w/ which occur in this environment but are not deleted. For instance, the /w/ is not deleted when it occupies the initial position of VNs of the patterns |C$_1$iC$_2$a:C$_3$at+an| (e.g. ***wi**fa:dat-an* 'arrival, accusative/indefinite form'), |C$_1$iC$_2$a:C$_3$+an| (***wi**sa:l-an* 'connecting, accusative/indefinite form') and |C$_1$iC$_2$C$_3$a:n+an| (e.g. ***wi**ʤda:n-an* 'finding, accusative/indefinite form'). As can be noticed from these examples, the deletion of the /w/ does not takes place when the long vowel /a:/ is a constituent of the VN forms. On the other hand, the /w/ is regularly deleted when it occurs in the initial position of VNs of the patterns |C$_1$iC$_2$C$_3$+an| and |C$_1$iC$_2$C$_3$at+an| because the vowel /a:/ is not a constituent of their VN patterns. The /w/-deletion rule which takes place when the VN stems are of the shape |CiCC| and |CiCC+CV|, like |C$_1$iC$_2$C$_3$+at|, is stated in 3.21 (a).

The deletion of the /w/ in VN stems of these shapes results in leaving their syllable onsetless which is banned in MSA. Accordingly, the epenthetic consonant /ʔ/ is added to the VN stems of the shape |CiCC| to fill their empty onset positions. Contrastively, the empty onset position in the VN stems of the shape |CiCC+CV| is not filled through the addition of the /ʔ/, but rather a metathesis rule, which can be called the /i/-metathesis rule, is applied to fill this position by switching the places of the /i/ vowel and the consonant that follows it (~~**wi**~~**C**C+VC→ ~~**w**~~**Ci**C+VC). The /i/-metathesis rule is stated in 3.21 (b).

3.21. a. $$w \rightarrow \emptyset \,/\, +___iCC \begin{Bmatrix} +aC & \text{(+ designates morpheme boundary)} \\ ] & \text{( ] designates stem boundary)} \end{Bmatrix} \quad [\text{VNs}]$$

b. $\$iCC+aC \rightarrow CiC+aC$ ($ designates syllable boundary)

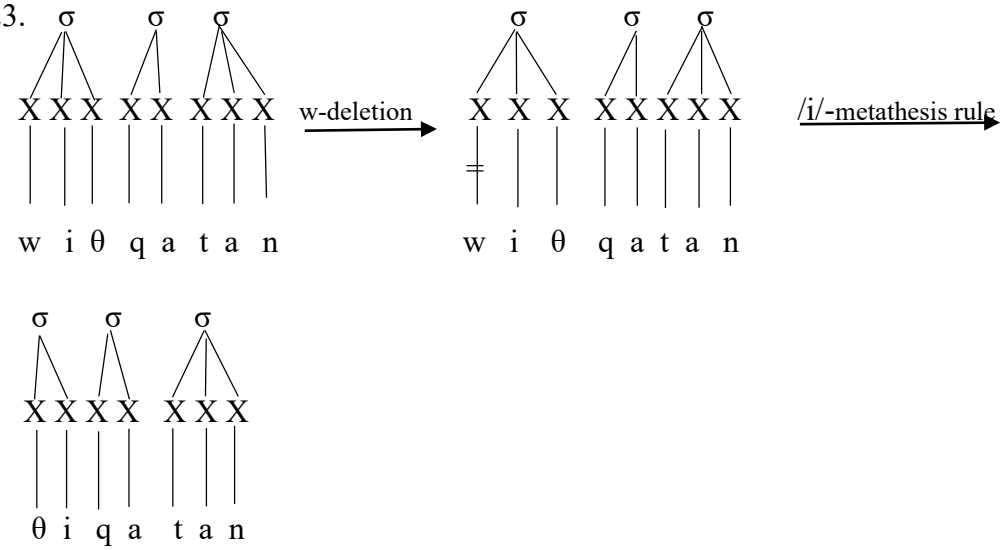
The conditioning environment for the /w/-deletion rule in 3.21 (a) can be added to the one proposed by Mahadin (1982, 273) to form a general rule of /w/-deletion which is expressed in 3.22:

3.22. $$w \rightarrow \emptyset \begin{Bmatrix} \underset{[\text{personal prefix}]}{Ca+\text{--}C_2iC_3} \quad [+\text{B-verbs}] \quad (+\text{B=basic}) \\ +___\ iCC \begin{Bmatrix} +aC \text{ (+ designates morpheme boundary)} \\ ] \text{ ( ] designates stem boundary)} \end{Bmatrix} \quad [\text{VNs}] \end{Bmatrix}$$

The derivation of the VNs that have surface representations of the shape |C$_2$iC$_3$at+an| from their underlying representations which are of the shape |C$_1$iC$_2$C$_3$at+an| is exemplified by deriving *θiqat-an* 'trust, accusative /indefinite form' from its underlying representation *wiθqat-an* as presented in 3.23.

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3.23.



The 10 medially-weak VNs which have the pattern |$C_1iC_2C_3at+an$| are listed in Table 5.26 in the appendices. The underlying representations of these VNs are of the shape |C_1iGC_3at+an| and their surface representations are of the shape |$C_1i{:}C_3at+an$| (e.g. *ri:bat-an* 'skepticism, accusative/indefinite form'). The surface representations of these VNs are derived from their underlying representations through the application of the glide assimilation rule, as stated in 3.4, which assimilates a glide to its preceding cognate vowel. This rule directly forms the surface representations of the 8 VNs which have the underlying shape |C_1ijC_3at+an| (e.g. *dʒ**ij**ʔat-an→ dʒ**i:**ʔat-an* 'coming, accusative/indefinite form').

However, this rule cannot apply to the 2 VNs which have the underlying shape |C_1iwC_3at+an| because the /w/ is not the cognate glide of the /i/. Consequently, the /w/ first partially assimilates to the /i/ through the application of the /w/-to-/j/ rule, as stated in 3.7, which changes the former to the cognate glide of the latter (e.g. *xi**w**fat-an→ xi**j**fat-an*). The outcome of the /w/-to-/j/ rule undergoes the glide assimilation rule which applies to |C**ij**Cat+an| and causes it to surface as |C**i:**Cat+an| (*xi**j**fat-an→ xi**:**fat-an* 'fearing, accusative/indefinite form').

As opposed to the initially and medially weak VNs of the pattern |$C_1iC_2C_3at+an$|, the surface representations of the 7 finally-weak VNs of this pattern, which are listed in Table 5.57 in the appendices, are the same as their underlying representations (e.g. *himjat-an* 'a diet, accusative/ indefinite form'). That is, the derivation of the surface representations of these VNs, akin to their strong counterparts, only requires applying the ablaut, metathesis and affixation processes. As for the 3 doubly-weak VNs of this pattern, which are presented in Table 5.73 in the appendices**,** the 2 of them which have glides in their initial and final positions exhibit the same derivational pattern of their initially and finally weak counterparts (e.g. *ʃijat-an* 'adorning, accusative/indefinite form').

On the other hand, the doubly-weak VN which has glides in its medial and final positions, i.e. *ni**j**jat-an* 'intention, accusative/indefinite form', does not adhere to the glide assimilation rule which targets its medially-weak counterparts. This is attributed to the observation the that /ij/ sequence in this VN is followed by a glide. The glide lacks the [consonantal] feature and this prevents the application of the glide assimilation rule to it. It should be noted that the glide that follows the /ij/ sequence in *nijjat-an* is underlyingly a /w/ which surfaces as a /j/ through the application of the /w/-fronting rule 3.2 (a).

3.14. The derivation of weak VNs of the pattern |$C_1aC_2C_3at+an$|

The 4 initially (e.g. *jaqaðat-an* 'waking up, accusative/indefinite form'), 20 medially (e.g. *ᶜawdat-an* 'returning back, accusative/indefinite form') and 18 finally weak (e.g. *qaswat-an* 'harshness,

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accusative/indefinite form') VNs which are listed in Table 5.10, Table 5.23 and Table 5.49 in the appendices, respectively, have underlying and surface representations of the shape |$C_1aC_2C_3at+an$|. The derivation of the underlying representations of these VNs, akin to their counterparts of the pattern |$C_1iC_2C_3at+an$|, requires applying the ablaut and metathesis rules to their verbal stems and adding the suffixes /at/ and /an/ to them. For example, deriving the underlying representation, which is the same as the surface representation, of the medially-weak VN *ᶜawdat-an* 'returning back, accusative/indefinite form' from its verbal stem *ᶜwud* involves changing its stem vowel to /a/ through the ablaut rule (*ᶜwud*→ *ᶜwad*), metathesizing this vowel and consonant that precedes it through the metathesis rule (***ᶜwa****d*→ ***ᶜa****wd*) and adding the suffixes /at/ (*ᶜawd* → *ᶜawd****at***) and /an/ to it (*ᶜawdat*→ *ᶜawdat-****an***).

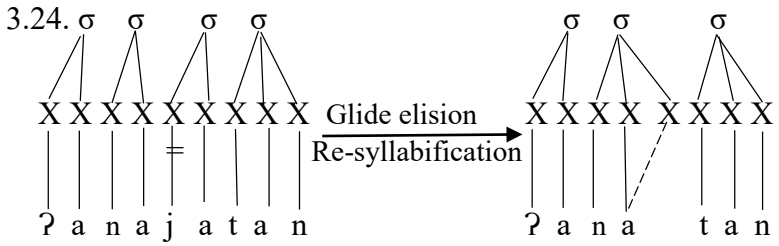
3.15. The derivation of weak VNs of the pattern |$C_1uC_2C_3at+an$|

The underlying representations of the VNs of the pattern |$C_1uC_2C_3at+an$| are formed in the same way as those of the pattern |$C_1aC_2C_3at+an$|. The only difference in the derivation of these two patterns is that the ablaut rule changes the stem vowel of the verbal stems of the VNs that have these patterns to /u/ and /a/, respectively. The 9 finally-weak VNs of the pattern |$C_1uC_2C_3at+an$|, which are presented in Table 5.56, have surface representations which are the same as their underlying representations (e.g. *ɣudwat-an* 'becoming, accusative/indefinite form'). On the other hand, the surface representation of the one medially-weak VN of this pattern, which is presented in Table 5.38 in the appendices, is different from its underlying representation in that the former representation is derived from the latter through the application of the glide assimilation rule (*dʒ****uw****dat-an→ dʒ****u:****dat-an* 'quality, accusative/indefinite form').

3.16. The derivation of weak VNs of the pattern |$C_1aC_2aC_3at+an$|

Forming the underlying representations of the VNs that have the pattern |$C_1aC_2aC_3at+an$| involves applying the ablaut and metathesis rules to their verbal stems (CCVC→ CC**a**C→ C**a**CC) and adding the infix /a/ and the suffixes /at/ and /an/ to them (CaCC→ CaC**a**C→ CaCaC**at+an)**. Deriving the surface representations of the 7 finally-weak VPs of this pattern, as shown in Table 5.58 in the appendices, requires subjecting their underlying representations to the glide elision rule which is stated in 3.11 (b). For example, the surface representation of the finally-weak VN *ʔana:t-an* 'slowing down, accusative/indefinite form' is derived from its underlying representation *ʔanajat-an* through the deletion of the /j/ because it is followed by a morpheme boundary and surrounded by two instances of the /a/ vowel. The deletion of the /j/ causes the appearance of two identical adjacent segments, i.e. two /a/ vowels, on the melody tier which is a violation of the OCP. Therefore, the two identical /a/ vowels become the single long vowel /a:/ as presented in 3.24.

3.24.



3.17. The derivation of weak VNs of the pattern |$C_1aC_2iC_3at+an$|

The 5 medially-weak VNs which are listed in Table 5.30 in the appendices have surface representations of the shape |$C_1a:C_3at+an$| (e.g. *ra:ẖat-an* 'comfort, accusative/indefinite form'). The three possible underlying patterns of these VNs might be |$C_1aC_2aC_3at+an$|, |$C_1aC_2uC_3at+an$| or

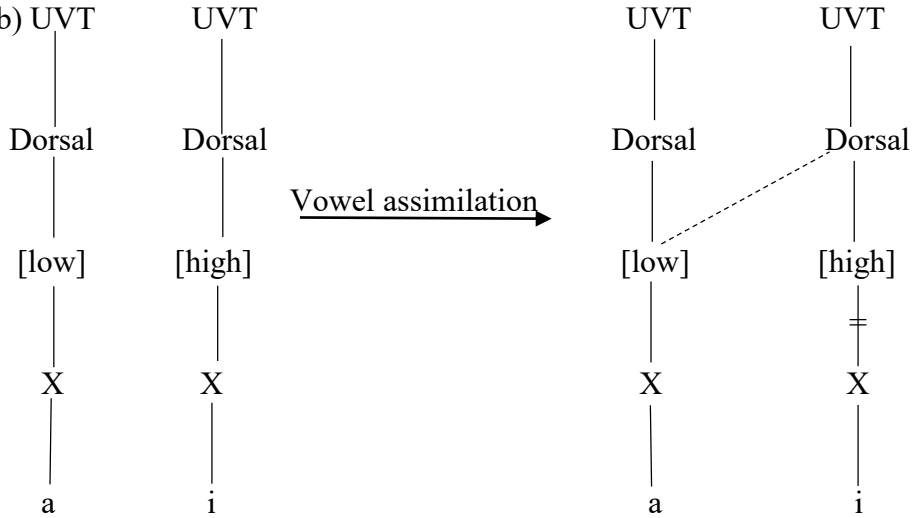
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|$C_1aC_2iC_3at+an$|. Excluding the first possible pattern is based on the assumption that the glide in derived nominal stems is not deleted between two /a/ vowels unless when it is followed by a morpheme boundary. Based on this assumption, which is expressed in 3.11 (b), the medial glide in the pattern |$C_1a\mathbf{C_2}aC_3at+an$| is not affected by the glide elision rule. Accordingly, the surface representations of these VNs cannot be derived on the basis of this pattern. The derivation of the surface representations of these VNs requires postulating that the vowel after the medial glide in their underlying representations is a high vowel. This ascribed to noting that the glide in |$\mathbf{aG}\begin{Bmatrix}\mathbf{u}\\\mathbf{i}\end{Bmatrix}$| sequences is deleted in derived nominal stems even if it is not followed by a morpheme boundary. The high vowel that follows the targeted glide is hypothesized to be /i/ and not /u/ because the list of the 44 possible VN patterns in MSA which is compiled by Wright (1986, 110-112) includes the pattern |$C_1\mathbf{aC_2i}C_3at+an$| (e.g. *sariqat-an* 'robbery, accusative/indefinite form') and not |$C_1\mathbf{aC_2u}C_3at+an$|.

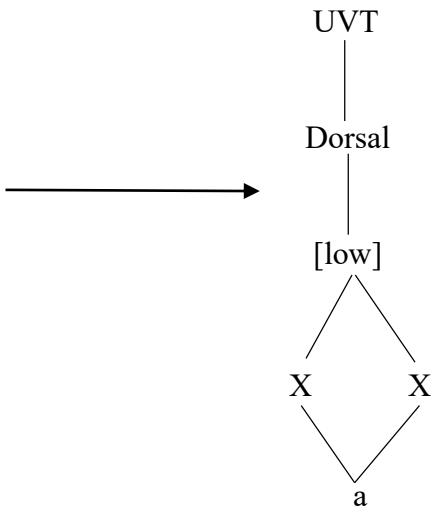
The derivation of the underlying representations of the 5 medially-weak VNs that have the pattern |$C_1aC_2iC_3at+an$| involves applying the ablaut and metathesis rules to their verbal stems and adding the infix /i/ and the suffixes /at/ and /an/ to them. The underlying representations of these VNs surface as |$C_1a{:}C_3at+an$| due to the application of the glide elision rule to their medial consonant which is a glide positioned between the vowels /a/ and /i/ ($C_1a\mathbf{G}iC_3at+an \rightarrow C_1a\mathbf{\sout{G}}iC_3at+an$). The deletion of this glide produces the form |C_1aiC_3at+an|. The vowel /i/ in this form assimilates to the vowel /a/ through the vowel assimilation rule, as adopted from Mahadin (1982, 234) and stated in 3.16 (a), which assimilates a vowel to its preceding vowel. As presented in 3.16 (b), the representation of the assimilation of the /i/ to the /a/ within the feature geometry model involves spreading the feature [low] of the vowel /a/ to the /i/. This results in delinking the feature [high] from the latter vowel because a sound cannot be specified for the features [high] and [low] simultaneously due to conforming to universal default rules (cf. Spencer 1996). The output of vowel assimilation rule is a long vowel which is specified for the feature [low], i.e. the vowel /a:/, and it application to the form |$C_1\mathbf{ai}C_3at+an$| changes it to |$C_1\mathbf{a:}C_3at+an$|.

3.16. (a). $V_i \rightarrow V_j / V_j$___

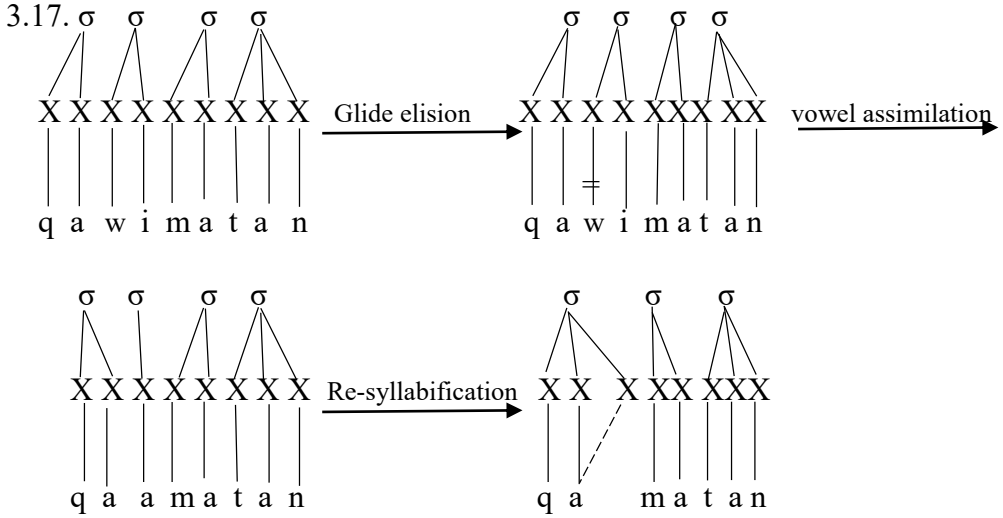
3.16. (b)



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Forming the surface representations of the medially-weak VNs of the shape |C_1a:C_3at+an| from their underlying forms of the shape |C_1aC_2iC_3at+an| is exemplified by the formation of *qa:mat-an* 'stature, accusative/indefinite form' from *qawimat-an* which is shown in 3.17.



3.18. The derivation of weak VNs of the pattern |C_1aC_2a:C_3at+an|

The VNs of the shape |C_1aC_2a:C_3at+an| are formed by applying the ablaut (CC**V**C→ CC**a**C) and metathesis (C**Ca**C→ C**aC**C) rules to their verbal stems, inserting the infix /a:/ between their second and third radicals (CaCC→ CaC**a:**C) and attaching the suffixes /at/ (CaCa:C→ CaCa:C**at**) and /an/ to them (CaCa:Cat→ CaCa:Cat-**an**). Is should be noted that the underlying representation of the infix which is added to this VN pattern is assumed to be /a:/ instead of a combination of the short vowel /a/ and a glide, i.e. |aG| or |Ga|. Assuming that the vowel /a:/ is found in the underlying and surface representations of the VNs that have the pattern |CaCa:Cat-an**|** is based on the observation that the alteration between this vowel and the typical underlying representation of long vowels in MSA, i.e. a combination of a glide and a short vowel, cannot be phonologically accounted for in this VN pattern.

That is, suggesting that the underlying representation of the VN pattern |CaC**a:**Cat-an**|** is |CaC**aG**Cat-an| or |CaC**Ga**Cat-an| requires positing a rule which changes the underlying representation of this pattern to its surface representation. However, the |aG| and |Ga| sequences which are surrounded by consonants are generally stable in MSA which entails that they are not subjected to any phonological rules unless they violate a constraint on MSA syllable structure. One can notice that these sequences do not violate any of MSA constraints on syllable structure in this VN

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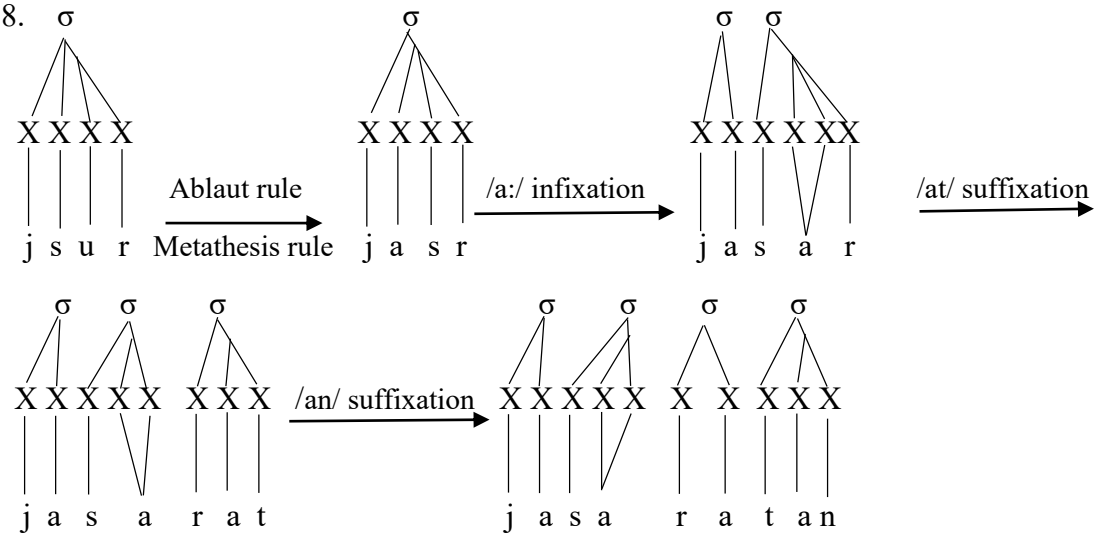
pattern which entails that they are stable in it. Since there is no phonological motivation for proposing that the underlying form of the vowel /a:/ in the VN pattern |CaC**a:**Cat-an| is a glide/vowel sequence, the surface and underlying forms of this vowel are suggested to be the same in this VN pattern.

Accordingly, in contrast with the long vowels /u:/ and /i:/ which only appear in the surface representations of linguistic forms in MSA, the long vowel /a:/ appears in the surface representations of some forms and in the underlying and surface representations of other forms in this variety of Arabic. For example, the vowel /a:/ only appears in the surface representation of the perfective verb *qa:m-a* 'he stood up, accusative case' due to the application of the glide elision rule to the underlying form of this verb (*q**awa**m-a→ q**aa**m-a→ q**a:**m-a*). On the other hand, the long vowel /a:/ appears in the underlying and surface representations of the VN *waqa:r-an* 'dignity, accusative/indefinite form' because there is no phonological reason for proposing that the underlying representation of this VN is different from its surface representation. The relative stability of the vowel /a:/, compared to /i:/ and /u:/, is ascribed to the assumption that the vowel /a/ has no cognate glide which makes it less susceptible to phonological alternations.

There are 12 initially-weak (e.g. *jasa:rat-an* 'easiness, accusative/indefinite form'), 18 finally-weak (e.g. *ɣaba:wat-an* 'stupidity, accusative/indefinite form') and 4 doubly-weak (e.g. *wala:jat-an* 'ruling', accusative/indefinite form') VNs of the pattern |C_1aC_2a:C_3at+an|. These VNs are listed in the appendices in Table 5.5, Table 5.50 and Table 5.71, respectively. The 12 initially-weak VNs that are of this pattern have surface representations which are the same as their underlying representations. This can be illustrated by deriving the VN *jasa:rat-an* 'easiness, accusative/indefinite form' from its verbal stem *jsur*. The derivation of this VN involves changing the stem vowel of its verbal stem to /a/ (*js**u**r→js**a**r*), metathesizing the stem vowel and the consonant that precedes it (*js**a**r→ j**a**sr*) and inserting the infix /a:/ between its second and third consonants (*jsar→jas**a:**r*) and the suffix /at/ to the resultant sequence (*jasa:r→ jasa:r**at**)*. Finally, the suffix /an/ is added to this VN stem to derive its accusative/indefinite form (*jasa:rat→ jasa:rat-**an**)*.

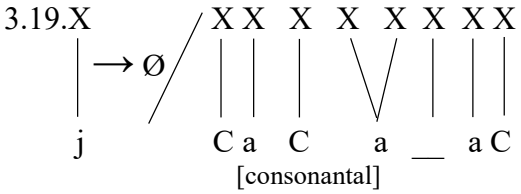
An interesting observation about the suffix /at/, which is an integral part of this pattern, is that it has two realizations, i.e./at/ and /ah/. This suffix is realized as /at/ when the VN pattern is followed by another suffix and it is realized as /ah/ when the VN pattern is not followed by other suffixes. Consequently, when the accusative/indefinite suffix /an/ is attached to the VN stem *jasa:rat,* this suffix is uttered as /at/. However, this VN surfaces as *jasa:rah* when it is uninflected, i.e. unfollowed by other suffixes. The representation of the derivational process of *jasa:rat-an* 'easiness, accusative/indefinite form' from its verbal stem *jsur* is depicted in 3.18.

3.18.



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The 18 finally-weak VNs of the pattern |$C_1aC_2a:C_3at+an$| are divided into two categories. The first category consists of 14 VNs which have the underlying shape |$C_1aC_2a:$**w**at+an| and the second category includes 8 VNs of the underlying shape |$C_1aC_2a:$**j**at+an|. The underlying /j/ in the VNs of the second category is realized as a /w/ in their surface representations (e.g. *dara:**j**at-an* → *dara:**w**at-an* 'ferocity, accusative/indefinite form'). The surface representations of these VNs can be accounted for by postulating that the glide /j/ which occurs in the sequence |CaCa:jaC| undergoes a deletion rule which is stated in 3.19.



Stipulating that the consonant which precedes the long vowel /a:/ is specified for the feature [consonantal] is attributed to the observation that the doubly-weak VNs of this pattern do not undergo the /j/-deletion rule which is presented in 3.19. For instance, the underlying /j/ of the doubly-weak VN *hawa:**j**at-an* 'inclusion, accusative/indefinite case', which is derived from the verbal stem *hwij*, appears in the surface representation of this VN. Preventing this VN, and the other doubly-weak VNs of this pattern, from undergoing the /j/ deletion rule can be accomplished by proposing that the consonant which precedes the /a:/ vowel in the sequence |Ca**C**a:jaC| is a non-glide consonant, i.e. a consonant which is not specified of the feature [consonantal]. Moreover, hypothesizing that the non-glide consonant which precedes the vowel /a:/ in the sequence |C**aCa:**jaC| is in turn preceded by the vowel /a/ is ascribed to noticing that the underlying /j/ in the finally-weak VNs of the pattern |CiCa:Cat-an| do not undergo the /j/-deletion rule, For example, the /j/ in VN *rima:**j**at-an* 'shooting, accusative/indefinite form' is not subjected to this rule because the vowel which precedes the consonant /m/ in the sequence |r**im**a:jat| is not /a/.

The deletion of the /j/ in the VNs which have the underlying shape |$C_1aC_2a:$**j**at+an| through the /j/-deletion rule causes their third syllable to become onsetless (Ca**.**Ca:**.**jaC→ Ca**.**Ca:**.**aC). Onsetless syllable are banned in MSA; hence the /w/ is utilized for filling the empty onset position (Ca**.**Ca:**.**aC→ Ca**.**Ca:**.w**aC). The question as to why the /w/ can be used in sequences of the shape |CaCa:**G**aC|, whereas the /j/ cannot now arises. One can tentatively attribute this to the assumption that the glide /w/ is less similar to its surrounding /a/ vowels than the /j/ because it has a secondary articulation, i.e. lip rounding, which the /j/ and the /a/ lack.

As for the 14 VNs of the pattern |$C_1aC_2a:C_3at+an$| which have the underlying shape |$C_1aC_2a:$**w**at+an|, the surface representations of 9 of them are the same as their underlying representations (e.g. *qasa:**w**at-an* 'harshness, accusative/indefinite form'). On the other hand, the underlying /w/ in the other 3 VNs of this shape appears as an /ʔ/ in their surface representations ($C_1aC_2a:$**w**at+an→ $C_1aC_2a:$**ʔ**at+an). Interestingly, the three VNs which have the surface shape |$C_1aC_2a:$**ʔ**at+an| have alternative forms of the surface shape |$C_1aC_2a:$**w**at+an| which confirms that the glide /w/ can occur in sequences of the shape |CaCa:**G**aC| (e.g. *naqa:ʔat-an* and *naqa:wat-an* 'purity, accusative/indefinite form').

The alternation between the /w/ and the /ʔ/ in these VNs can be the result of the application of a rule which deletes the /w/ in sequences of the shape |CaCa:**G**aC| and inserts the /ʔ/ to fill the onset position which is left empty after the deletion of this glide (Ca**.**Ca:**.~~w~~**aC→ Ca**.**Ca:**.ʔ**aC). As can be noted, the /j/ and /w/ are deleted in sequences of the same shape, i.e. |CaCa:**G**aC|, which entails that their deletion rules have similar formats. Despite having similar formats, the /j/ and the /w/ deletion

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rule cannot be considered the same because the former is an obligatory rule which applies to the all the targeted sequences, whereas the latter is an optional rule which is responsible for variations in speech (see Jensen 2004 and Durand 2014 for the difference between obligatory and optional phonological rules).

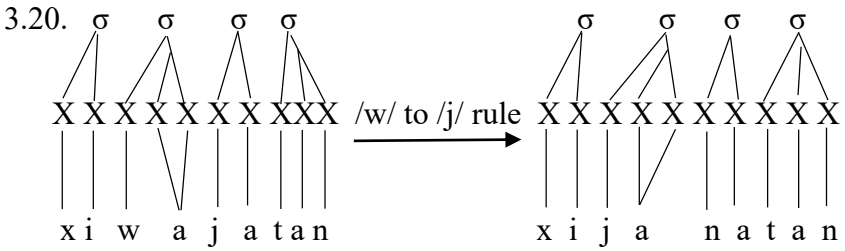
3.19. The derivation of weak VNs of the pattern |$C_1iC_2a:C_3at+an$|

There are 4 initially-weak, 25 medially-weak, 19 finally-weak and 6 doubly-weak VNs of the pattern |$C_1iC_2a:C_3at+an$|. These are listed in Table 5.11, Table 5.21, Table 5.48 and Table 5.68 in the appendices, respectively. The derivation of the underlying representations of these VNs involves applying the ablaut and metathesis rules to their verbal stems and adding the infix /a:/ and the suffixes /at/ and /an/ to them. For example, the underlying representation of the initially-weak VN *wira:θat-an* 'inheritance, accusative/indefinite form' is derived from its verbal stem *wriθ*, i.e. the stem of the imperfective verb *ja-riθ* 'he inherits', through metathesizing the stem vowel of *wriθ* and its preceding consonant (***wri***θ→***wir***θ) and adding the infix /a:/ (*wir*θ →***wira:***θ) and the suffixes /at/ and /an/ to it (*wira:*θ→ *wira:*θ***at-an***).

As can be noticed, the derivation of this VN does not require applying the ablaut rule to *wriθ* because the stem vowel of this verbal stem is the same as the stem vowel of the VN pattern |$C_1iC_2a:C_3at+an$|. Furthermore, these derivational steps form the VN *wira:θat-an* which means that the surface representation of this initially-weak VN, as well as the other initially-weak VNs of the pattern |$C_1iC_2a:C_3at+an$|, is the same as its underlying representation. It should be also noted that the underlying form of the infix /a:/ in this VN pattern is assumed to be the same as its surface representation because there are no phonological motivations for suggesting that this infix is underlyingly composed of a short vowel and a glide (See Section 3.18).

In contrast with the initially-weak VNs of the pattern |$C_1iC_2a:C_3at+an$|, the surface representations of the medially-weak VNs of this pattern are different from their underlying representations in that the underlying /w/ in these VNs is realized as /j/ in their surface representations (|C_1i**w**$a:C_3at+an$|→|C_1i**j**$a:C_3at+an$|). The alternation between the /w/ and the /j/ in these VNs is the result of undergoing the /w/-to-/j/ rule which is stated in 3.7. This rule targets the instances of the glide /w/ which occur in the sequence /i**w**/ and changes them to the cognate glide of their preceding vowel, i.e. the /i/. For instance, the /w/-to-/j/ rule is utilized for the derivation of the VN *xija:nat-an* 'betrayal, accusative/indefinite form' from it underlying representation *xiwa:nat-an* by partially assimilating the underlying /w/ to the vowel /i/ which results in changing the former to the cognate glide of the latter. This is depicted in 3.20.

3.20.



As for the finally-weak (e.g. *hima:jat-an* 'protection, accusative/indefinite form') and doubly-weak (e.g. *riwa:jat-an* 'narration, accusative/indefinite form') VNs of this pattern, they both have surface representations which are the same as their underlying representations. A problematic issue is that 4 of the 6 doubly-weak VNs of this pattern are of the shape |C_1iwa:jat+an|. The /w/ in these VNs is preceded by the vowel /i/; hence it should undergo the /w/-to-/j/ assimilation rule. However, the /w/ in these VNs does not undergo this rule which makes their surface representations identical to their underlying representations.

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Accounting for the surface representations of these VNs requires preventing them from undergoing the /w/-to-/j/ rule. The /w/-to-/j/ rule applies to the /iw/ and /uj/ sequences if they are followed by a consonant (e.g. *qi**w**l-an→ qi**j**l-an)*, a vowel (e.g. *xi**w**a:nat-an→ xi**j**a:nat-an*) or a morpheme boundary (*da:ᶜi**w**→ dw:ᶜi**j***). Accordingly, the environments in which this rule applies are very general. What can be done to prevent the doubly-weak VNs of the shape |C_1iwa:jat+an| from undergoing the /w/-to-/j/ rule is postulating that the /iw/ and /uj/ sequences which are followed by a vowel are targeted by this rule if the vowel in turn is followed by a non-glide consonant. Since the /iwa:/ sequence in the doubly-weak VNs of the shape |C_1**iwa:j**at+an| is followed by the glide /j/, these VNs do not undergo this rule and they retain their underlying representations. The restatement of the /w/-to-/j/ rule with the proposed modification to its conditioning environment is depicted in 3.21.

$$3.21.\ \begin{Bmatrix} w \\ j \end{Bmatrix} \rightarrow \begin{Bmatrix} j \\ w \end{Bmatrix} / \begin{Bmatrix} i \\ u \end{Bmatrix} __ \Big/ \begin{Bmatrix} C \\ VC[cons] \\ + \end{Bmatrix} \text{ (+ designates morpheme boundary)}$$

Another problematic issue with the /w/-to-/j/ rule is that the /iw/ and /uj/ sequences which are followed by a consonant are not only targeted by this rule but also by the vocalic assimilation rule, as taken from Brame (1970, 409) and presented in 3.22. The former rule changes these sequences to /ij/ and /uw/, respectively, by assimilating their second members to their first members, whereas the latter rule changes these sequences to /uw/ and /ij/, respectively, through assimilating their first members to their second members. Since one of the environments in which these two rules apply is phonologically the same, addressing this issue requires resorting to morphophonemics. The morphophonemic analysis of the types of stems to which these rules reveals that some stems such as the VN and AP stems are only subjected to the /w/-to-/j/ rule, while others such as the PP stems are only targeted by the vocalic assimilation rule. However, validating the hypothesis that each of these rules apply to specific types of stems requires testing it on a variety of nominal and verbal stems in MSA.

$$3.22.\ \begin{Bmatrix} u \\ i \end{Bmatrix} \rightarrow \begin{Bmatrix} i \\ u \end{Bmatrix} / __ \begin{Bmatrix} j \\ w \end{Bmatrix} C$$

3.20. The derivation of weak VNs of the pattern |C_1aC_2a:C_3+an|

The underlying representations of the 76 weak VNs of the pattern |C_1aC_2a:C_3+an| are derived from their verbal stems through the applications of the ablaut rule which changes their stem vowel to /a/ (CC**V**C→ CC**a**C), the metathesis rule which switches the places of the stem vowel and the consonant that precedes it (C**Ca**C→ C**aC**C) and the addition of the infix /a:/ (CaC→ CaC **a:**C) and the accusative/indefinite form suffix /an/ to them (CaCa:C→ CaCa:C -**an**). The 6 initially-weak (e.g. *waqa:r-an* 'dignity, accusative/indefinite form') and the 22 medially-weak (e.g. *haja:t-an* 'life, accusative/ indefinite form') VNs of this pattern, as listed in Table 5.8 and Table 5.22 in the appendices, respectively, have surface representations which are the same as their underlying representations.

On the other hand, the surface representations of the 42 finally-weak and the 5 doubly-weak VNs of this pattern, which are shown in Table 5.44 and Table 5.70 in the appendices, respectively, are different from their underlying representations. The underlying representations of these VNs are, akin to their initially and medially weak counterparts, of the shape |C_1aC_2a:C_3-an|. However, the glide which occupies the position of |C_3| in the underlying representations of the finally and doubly weak VNs of this pattern appears as the glottal stop /ʔ/ in their surface representations (e.g. *xawa:ʔ-an* 'emptiness, accusative/indefinite form').

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Arab grammarians, such as Shahin (1980, 177), Ibin Asfor (1987, 326) and Al-Samurrai (2013, 227), identified this as a case of *ʔalʔiᶜla:l bilqalb* which involves substituting the glides with the glottal stop when they occur in the final position of the word preceded by an *ʔalif*, i.e. the long vowel /a:/. Subjecting the glides in this environment to *ʔalʔiᶜla:l bilqalb* is attributed to the assumption that the glides are weak speech sounds and thus cannot occur in the final position of the word when they are preceded by another weak sound like the /a:/. Accordingly, they are substituted with a stronger sound, i.e. the glottal stop /ʔ/, when they occur in this position.

The alternation between the glides and the glottal stop in this VN pattern is not considered a case of substitution because a sound cannot be substituted with another in the adopted model of phonology. Moreover, this alternation cannot be caused by an assimilation or dissimilation process because the glides and the glottal stop are phonetically dissimilar sounds. Alternatively, this alternation can be accounted for by proposing that the glides which are preceded by the long vowel /a:/ and which occur in the final position of the stem undergo an elision rule (a:G→a:) . This rule can be called the |a:G| glide elision rule and it is stated in 3.23.

3.23. X → Ø / X X ___] (] designates stem boundary)
G a

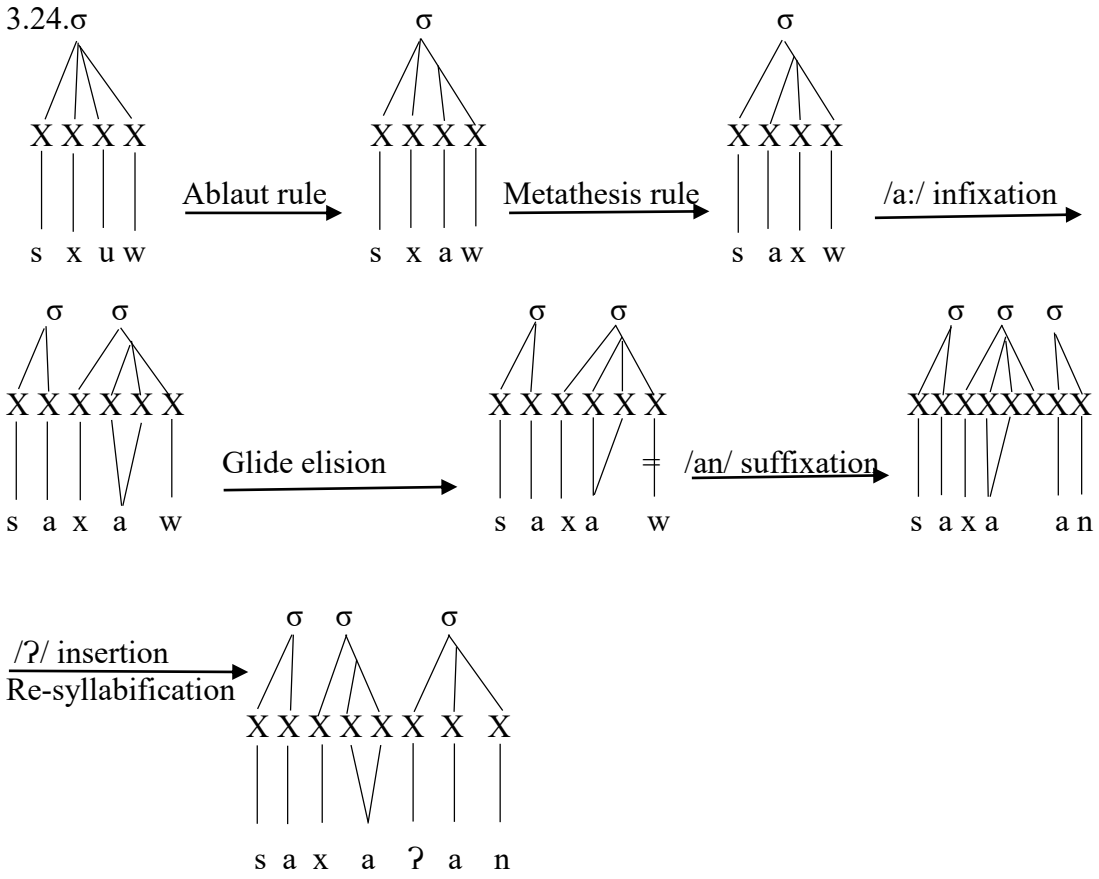
The deletion of the glide from these VNs causes the appearance of the vowel /a:/ in the final position of their stems. The addition of the accusative/indefinite suffix /an/ to the stems that end with the long vowel /a:/ causes the appearance of the sequence /a:-an/. The syllable /an/ in this sequence is onsetless because it is preceded by the vowel /a:/ and not by a consonant. Because onsetless syllables are not allowed in MSA, a glottal stop is inserted to function as the onset of the onsetless syllable.

It is important to point out that the |a:G| glide elision rule does not target the weak VNs of the shape |CVCa:**G**at-an| (e.g. e.g. *hima:jat-an* 'protection, accusative/indefinite form') because their final glide is followed by the suffix /at/ which constitutes an integral part of the stems of these VNs. In other words, the final glide of the VNs of the shape |CVCa:**G**at-an| does not occur in the final position of these VN stems; thus it does not meet the conditioning environment for this elision rule.

The derivation of the surface representations of the finally-weak VNs that have the pattern |C_1aC_2a:C_3-an| from their underlying representations is exemplified by deriving *sa-xa:-ʔan* 'generosity, accusative /indefinite form' from its underlying form *saxa:w-an*. First, the glide /w/ in *saxa:w* is deleted because it is preceded by the long vowel /a:/ and it occurs in the final position of the stem. The addition of the accusative/indefinite suffix /an/ to this VN stem causes its last syllable to be onsetless. Since this violates a constraint on MSA syllable structure, the glottal stop is added to occupy the empty onset position. The autosegmental representation of the derivation of this VN from its verbal stem is depicted in 3.24.

3.24.σ
X X X X
s x u w
Ablaut rule
σ
X X X X
s x a w
Metathesis rule
σ
X X X X
s a x w
/a:/ infixation

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3.21. The derivation of weak VNs of the pattern |$C_1uC_2a:C_3$+an|

Similar to the VNs of the pattern |$C_1aC_2a:C_3$+an|, the underlying representations of the VNs that have the pattern |$C_1uC_2a:C_3$+an| are formed through the application of the ablaut and metathesis rules to their verbal stems and the addition of the infix /a:/ and the suffix /an/ to them. The 5 medially-weak VNs of this pattern have surface representations which are the same as their underlying representations (e.g. *fuwa:q-an* 'hiccup, accusative/indefinite form'). In parallel with the finally and doubly weak VNs of the pattern |CaCa:C-an|, the surface representations of the 8 finally-weak VNs and the doubly-weak VN of the pattern |CuCa:C-an|, which are presented in Table 5.55 and Table 5.74, respectively, are derived from their underlying representations through the deletion of their final glide and the addition of the glottal stop to fill in the empty onset position. For example, the derivation of the surface representation of the VN *du^{c}a:ʔ-an* 'prayer, accusative/indefinite form' from its underlying representation *du^{c}a:w-an* involves deleting the glide /w/ because it is preceded by the vowel /a:/ and it occupies the final position of the stem and this yields *du^{c}a:-an*. Subsequently, the glottal stop /ʔ/ in inserted between the vowels /a:/ and /a/ to function as the onset of the onsetless syllable (*du.^{c}a:.**an*→ *du.^{c}a:.ʔ**an***).

3.22. The derivation of weak VNs of the pattern |$C_1iC_2a:C_3$+an|

The underlying representations of the VNs that have the pattern |$C_1iC_2a:C_3$+an| are formed through the same derivational steps which are followed in the formation of their counterparts of the patterns |$C_1aC_2a:C_3$+an| and |$C_1uC_2a:C_3$+an|. The only difference in the formation of underlying representations of these 3 patterns is that the ablaut rule changes the stem vowel of their verbal stems to /i/, /a/ and /u/, respectively. As for the surface representations of the VNs of the pattern |$C_1iC_2a:C_3$+an|, the 28 medially-weak VNs of them, which are listed in Table 5.20 in the appendices, are divided into two categories.

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The first category consists of 8 VNs which have the glide /j/ as their medial radical. The surface representations of these VNs are the same as their underlying representations (e.g. *qija:s-an* 'measuring, accusative/indefinite form'). The second category of these VNs consists of 20 VNs which underlyingly have the glide /w/ as their medial radical. The underlying /w/ in these VNs is changed to /j/ in their surface representations through the application of the /w/-to-/j/ rule, as stated in 3.21, which partially assimilates the glide /w/ to the vowel /i/ by changing it to the cognate glide of this vowel, i.e. the /j/ (e.g. *siwa:m-an→ sija:m-an* 'e.g. fasting, accusative/indefinite form').

The /w/-to-/j/ rule applies to 17 of the 20 VNs that have the underlying shape |Ciwa:C-an|. The other three VNs do not undergo this rule which results in retaining their underlying shape (e.g. *siwa:k-an* 'brushing teeth with the Siwak, accusative/indefinite form'). Assuming that these 3 VNs do not undergo the /w/-to-/j/ rule because of the identity of one of their radicals is inaccurate. This is ascribed to the observation that some of them have two variant forms. One of these forms undergoes this rule and the other fails to do so (e.g. *lija:ð-an* and *liwa:ð-an* 'escape, accusative/indefinite form'). Accordingly, no phonological reasons can be provided for the failure of these VNs to undergo the /w/-to-/j/ rule.

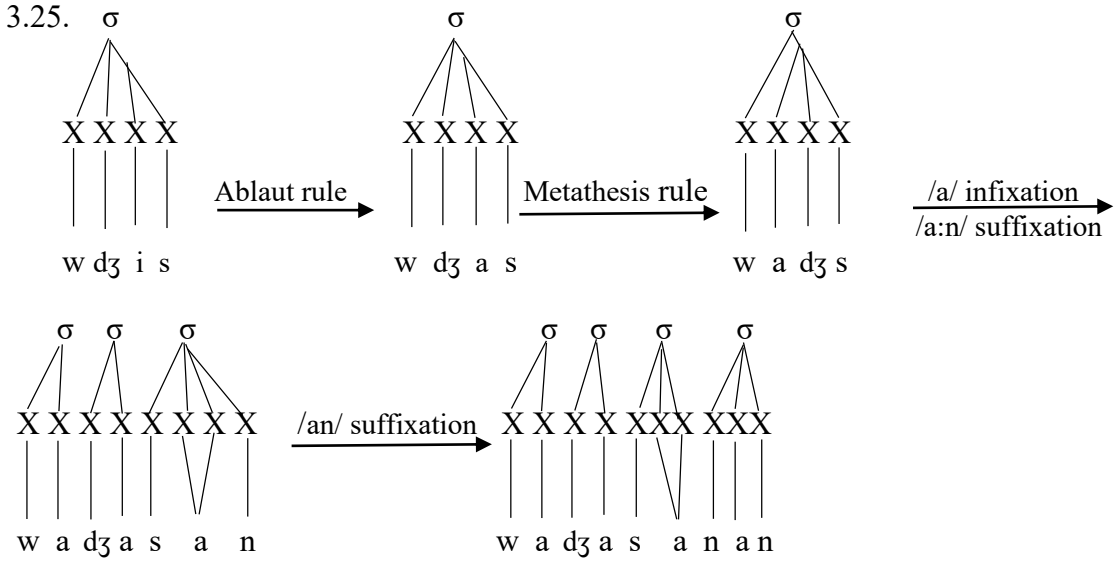
As for the 21 finally-weak VNs of the pattern |$C_1iC_2a:C_3$+an|, which are listed in Table 5.47 in the appendices, they follow the same derivational pattern of their finally-weak counterparts of the patterns |CaCa:C-an| and |CuCa:C-an| in that their derivation from their underlying representations involves the deletion of their final glide and the addition of the glottal stop to occupy the empty onset position (e.g. *ʃifa:j-an→ ʃifa:-an→ ʃifa:ʔ-an* 'healing, accusative/indefinite form').

3.23. The derivation of weak VNs of the pattern |$C_1aC_2aC_3a:n$ +an|

The formation of VNs of the pattern |$C_1aC_2aC_3a:n$+an| involves applying the ablaut and metathesis rules to their verbal stems, inserting the infix /a/ between their second and third consonants and adding the suffixes /a:n/ and /an/ to them. The 9 initially-weak (e.g. *wadʒasa:n-an* 'fearing, accusative/indefinite form'), 56 medially-weak (e.g. *ðawaba:n-an* 'melting, accusative/ indefinite form'), and 9 finally-weak (*haðaja:n-an* 'delirium, accusative/indefinite form') VNs of this pattern are listed in the appendices in Table 5.7, Table 5.19 and Table 5.52, respectively. The surface representations of these VNs are the same as their underlying representations in that no additional rules are employed for driving the former from the latter.

It should be indicated that the |aGa| sequence in the medially-weak VNs of this pattern (e.g. *dawara:n-an* 'rotation, accusative/indefinite form') is not subjected to the glide elision rule, as stated in 3.11 (b), because the glide in this sequence is not followed by a morpheme boundary. The autosegmental representation of the derivation of the VNs that have the pattern |$C_1aC_2aC_3a:n$+an| from their verbal stems is exemplified by the derivation of the initially-weak VN *wadʒasa:n-an* 'fearing, accusative/indefinite form' from its verbal stem *wdʒis* which is depicted in 3.25.

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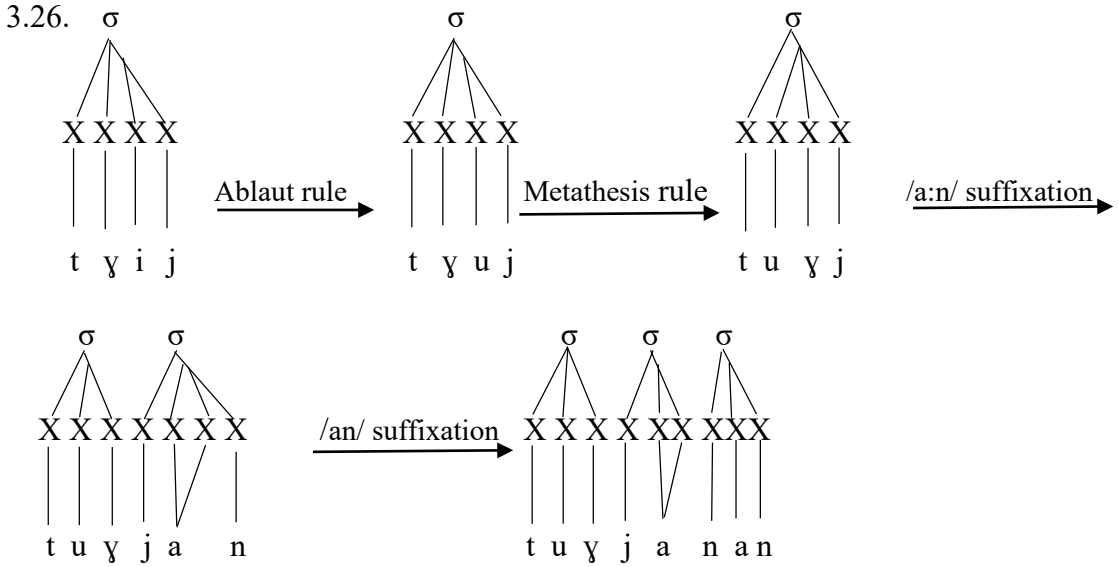


3.24. The derivation of weak VNs of the pattern |$C_1iC_2C_3a:n+an$|

There are one initially-weak (*widʒda:n-an* 'finding, accusative/indefinite form') and 5 finally-weak (e.g. *nisja:n-an* 'forgetting, accusative/indefinite form') VNs of the pattern |CiCCa:n+an|. These are presented in Table 5.15 and Table 5.60 in the appendices, respectively. These 6 VNs are derived through the application of the ablaut (CC**V**C→ CC**i**C) and the metathesis rules (C**Ci**C→ C**iC**C) to their verbal stems and the addition of the suffix /a:n/ to them (CiCC→CiCC**a:n**). Subsequently, the inflectional suffix /an/ is added to these VN to derive their accusative/indefinite forms (CiCCa:n→ CiCCa:n+**an**).

3.25. The derivation of weak VNs of the pattern |$C_1uC_2C_3a:n+an$|

The formation of the VNs of the pattern |$C_1uC_2C_3$a:n+an| requires applying the same rules that are utilized for forming the VNs of the pattern |$C_1iC_2C_3$a:n+an|. There are one initially-weak (*wuʃka:n-an* 'being imminent, accusative/indefinite form') and 6 finally-weak (e.g. *sulwa:n-an* 'forgetting, accusative/indefinite form') VNs of this pattern in the analyzed corpus. These VNs are presented in Table 5.16 and Table 5.59 in the appendices, respectively. The autosegmental representation of derivation of the finally-weak VN *tuɣja:n-an* 'tyranny, accusative/indefinite form' from its verbal stem *tɣij* is presented in 3.26 and used as an illustrative example of the derivational process of these VNs.



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3.26. The derivation of weak VNs of the pattern |ma+$C_1C_2iC_3at+an$|

There is only one weak VN of the pattern |ma+$C_1C_2iC_3$at+an|. This VN is the initially-weak VN *ma-wdʒidat-an* 'hatred, accusative/indefinite form' which is shown in Table 5.17 in the appendices. This VN is derived through the addition of the prefix /ma/ and the suffixes /at/ and /an/ to its verbal stem *wdʒid* (*wdʒid* → ***ma-wdʒidat-an***). As can be noted, the ablaut rule and the metathesis rules are not utilized for deriving this VN. The ablaut rule does not apply to this VN because the stem vowel of its verbal stem *wdʒid* matches the stem vowel of its VN pattern |ma+C_1C_2**i**C_3at+an|.

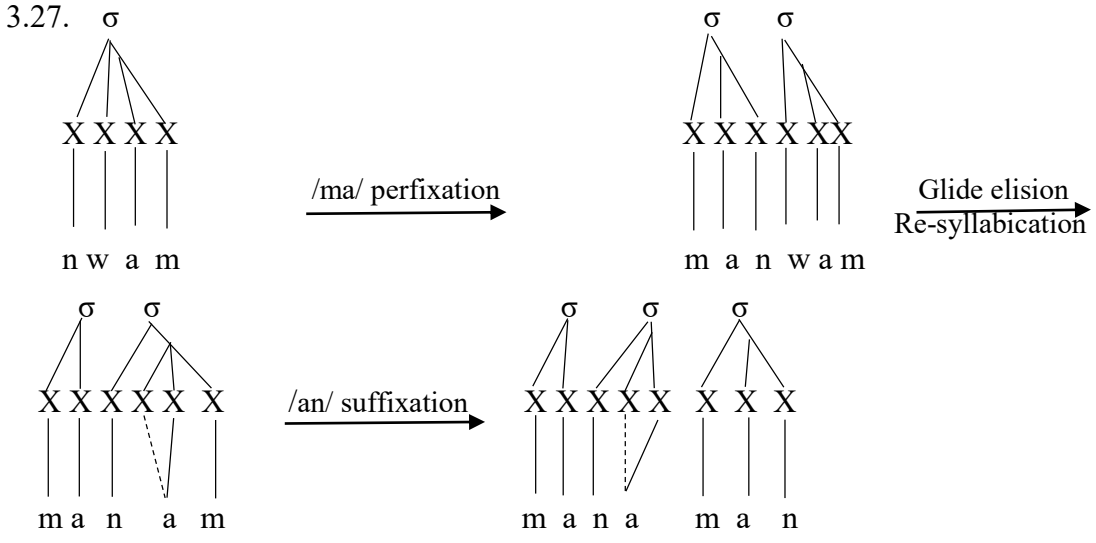
As for the metathesis rule, it does not apply to this VN for the reason that the prefix /ma/ is an integral part of this VN pattern. This causes the syllabification of the first consonant of this VN stem, i.e. the /w/, as the coda of the /ma/ syllable and the second consonant of this VN stem, i.e. the /dʒ/, as the onset of the following syllable (*ma**w.dʒ**i.da.tan*). Accordingly, these two consonants do not cluster in the onset position of the same syllable as in the other VN patterns which lack a prefix. This results in the avoidance of the violation of the constraint that prohibits the occurrence of complex onsets in MSA. As proposed in Section 3.2, the metathesis rule applies to the VN patterns that lack a prefix to prevent the violation of this constraint. Since this constraint is not violated in the VN patterns that have a prefix of the shape |CV|, such as |ma+$C_1C_2iC_3$at+an|, the metathesis rule does not apply to these patterns.

3.27. The derivation of weak VNs of the pattern |ma+$C_1C_2aC_3$+an|

The three medially-weak VNs of the pattern |ma+$C_1C_2aC_3$+an|, which are listed in Table 5.32 in the appendices, have surface representations of the shape |ma+C_1a:C_3+an|. The surface representations of these VNs are derived from their underlying representations through the deletion of their medial glide (ma+C_1**G**aC_3+an→ma+C_1**a**C_3+an) and the lengthening of its following vowel, i.e. the /a/, in compensation (ma+C_1**aG**C_3+an→ ma+C_1**a:**C_3+an). Two points should be indicated regarding this VN pattern. The first is that assuming that its underlying representation is |ma+$C_1C_2aC_3$+an| instead of |ma+$C_1aC_2aC_3$+an| is ascribed the assumption that the latter is not one of the VN patterns of MSA because the VN patterns which have a prefix as one of their integral constituents do not have a vowel between their first and second radicals (cf. Wright 1986, 110-112).

The second is that the deletion of the glide in this VN pattern is triggered by the application of the glide elision rule, as stated in 3.11 (b), because it meets its second conditioning environment. In accordance with this rule, the glide in sequences of the shape |+CGVC| is deleted and its following vowel is lengthened in compensation. The autosegmental representation of the derivation of *ma-na:m-an* 'dream, accusative/indefinite form' from its verbal stem *nwam,* i.e. the underlying stem of the verb *ja-na:m* 'he sleeps', is presented in 3.27 and used as an illustrative example of deriving the VNs of this pattern from their stems.

3.27.



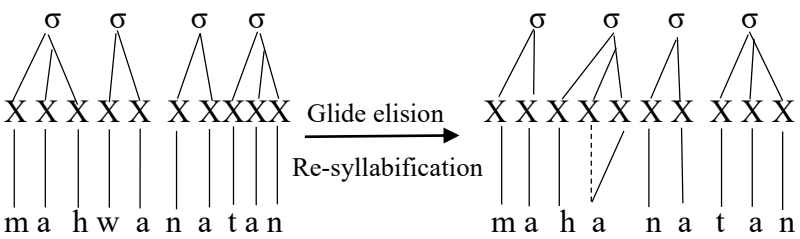
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Similar to the VNs of the pattern |ma+$C_1C_2iC_3$at+an|, the derivation of the underlying representation of this VN, i.e. *ma-nawm-an*, does not require the application of the ablaut rule because the stem vowel of its verbal stem *nw**a**m* is /a/ which is the same as the stem vowel of this VN pattern. Moreover, the metathesis rule is not employed for the derivation of the underlying representation of this VN. This is due to the observation that the prefix /ma/ constitutes an integral part of this VN pattern which enables syllabifying the first consonant of this VN stem as the coda of the /ma/ syllable and the second consonant of this stem as the onset of the following syllable (*ma**n.w**a.man*). It should be also noted that the deletion of the glide in this VN pattern, as in *man.**w**a.man*, causes its second syllable to become onsetless. Because onsetless syllables are banned in MSA, a re-syllabification process is applied to fill in the empty onset position (*man.**w**a.man* →*man.**a:**.man*→*ma.**n**a:.man*). Re-syllabification processes apply to the output of a phonological rule when it does not conform to the constraints on syllable structures in the course of derivation to re-syllabify it in accordance with these constraints (Clements and Keyser 1983, 54; Mahadin 1994, 56).

3.28. The derivation of weak VNs of the pattern |ma+$C_1C_2aC_3$at+an|

The surface representations of the two-medially weak VNs of this pattern, which are shown in Table 5.34 in the appendices, are of the shape |ma+C_1a:C_3at+an|. These representations are derived from their underlying representations through the glide elision rule. The glide elision rule applies to the underlying representations of these VNs which are of the shape |ma+$C_1C_2aC_3$at+an|. This rule targets |C_2| of |ma+C_1**C_2**aC_3at+an| because it is a glide which occurs in a |+CGVC| sequence and causes the deletion of this glide and the lengthening of its following vowel in compensation. The derivation of *ma-ha:nat-an* 'affront, accusative/indefinite form' from its underlying representation *ma-hwanat-an* is used as an illustrative example in 3.28.

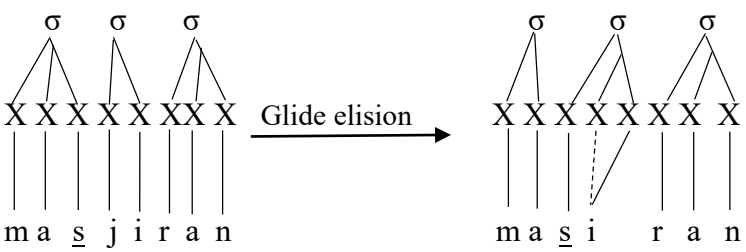
3.28.



3.29. The derivation of weak VNs of the pattern |ma+$C_1C_2iC_3$+an|

There is only one weak VN of the pattern |ma+$C_1C_2iC_3$+an|. This VN, which is presented in Table 5.42 in the appendices**,** has a surface representation of the shape |ma+C_1i:C_3+an|. The surface representation of this VN is derived from its underlying representation through the glide elision rule. The glide elision rule applies to *ma-s̲jir-an*, i.e. the underlying representation of this VN, and deletes the glide /j/ and lengthens its following vowel in compensation which causes it to surface as *ma-s̲i:r-an* 'destiny, accusative/indefinite form'. The autosegmental representation of the derivation of *ma-s̲i:r-an* from its underlying representation *ma-s̲jir-an* is depicted in 3.29.

3.29.



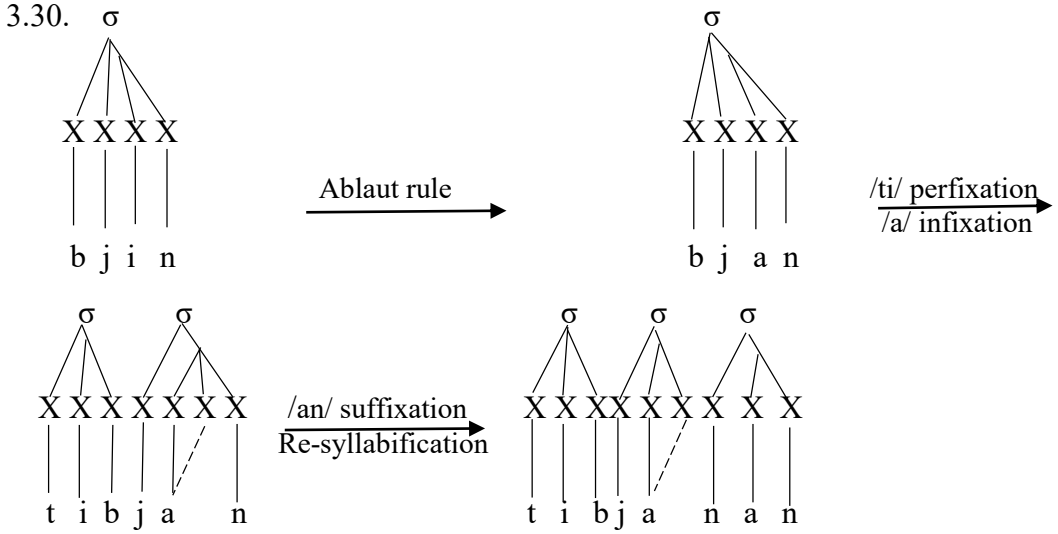
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3.30. The derivation of weak VNs of the pattern |ti+C_1C_2a:C_3+an|

The derivation of the two medially-weak VNs of the pattern |ti+C_1C_2a:C_3+an|, which are listed in Table 5.35 in the appendices, from their verbal stems involves applying the ablaut rule to their verbal stems to change their stem vowel to /a/ (CC**V**C→ CC**a**C). This is followed by adding the prefix /ti/ and the infix /a/ to these stems (CCaC→ **ti**-CC**a**C) and attaching the accusative/indefinite form suffix /an/ to the resultant forms (ti-CCaaC→ ti-CCaaC-**an**). Since the OCP prohibits the occurrence of two adjacent identical vowels, the stem vowel /a/ and the infix /a/ become the single long vowel /a:/ (ti-CC**aa**C-an→ ti-CC**a:**C-an).

It should be observed that akin to the VN patterns that have the prefix /ma/, the vowel metathesis rule is not employed for the derivation of the VNs that have the prefix /ti/ (see Section 3.15). This supports the hypothesis proposed in Section 3.2 which predicts that the vowel metathesis rule is a phonologically-conditioned rule which applies to break up consonant clusters that occur in the onset position of the syllable in the VN patterns that lack a prefix. The autosegmental representation of the formation of the VN *ti-bja:n-an* 'clarification, accusative/indefinite form' on the basis of its verbal stem *bjin* is used as an illustrative example in 3.30.

3.30.



3.31. The derivation of weak VNs of the pattern |ta+C_1C_2a:C_3+an|

The two medially-weak VNs which are shown in Table 5.36 in the appendices are of the pattern |ta+C_1C_2a:C_3+an| (e.g. *ta-sja:r-an* 'walking, accusative/indefinite form'). These VNs are derived from their stems through the application of the ablaut rule (sj**i**r→ sj**a**r), and the addition of the prefix /ta/, infix /a/ and suffix /an/ to them (sjar→ **ta**-sj**a**r-**an**). As with the VNs of the pattern |ti+C_1C_2a:C_3+an|, the two contiguous /a/ vowels become the long vowel /a:/ in the VNs of the pattern |ta+C_1C_2a:C_3+an| to satisfy the OCP (ta-sj**aa**r-an→ ta-sj**a:**r-an).

3.32. The derivation of weak VNs of the pattern |C_1uC_2u:C_3at+an|

The formation of the underlying representations of the VNs that have the pattern |C_1uC_2u:C_3at+an| involves subjecting their verbal stems to the ablaut (CC**V**C→CC**u**C) and metathesis rules (C**Cu**C→ C**uC**C) and inserting the infix /uw/ (CuCC→CuC**uw**C) and the suffixes /at/ (CuCuwC→ CuCuwC**at**) and /an/ to them (CuCuwCat→ CuCuwCat-**an**). The 5 medially-weak and the 4 finally-weak VNs of this pattern are presented in Table 5.29 and Table 5.61 in the appendices, respectively. The surface representations of the medially-weak VNs of this pattern are derived from their underlying representations through applying the glide assimilation rule to the infix /uw/ which changes it to /u:/ (CuC**uw**Cat-an→ CuC**u:**Cat-an). For instance, the derivation of the surface representation of the medially-weak VN *luju:nat-an* 'flexibility, accusative/indefinite form' from its underlying

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representation *lujuwnat-an* involves changing the infix /uw/ to /u:/ through the glide assimilation rule (*luj**uw**nat-an*→ *luj**u:**nat-an*).

In contrast with their medially-weak counterparts, the glide assimilation rule is not utilized for the derivation of the surface representations of the finally-weak VNs of this pattern. This is ascribed to the observation that the /uw/ infix in these VNs is followed by a glide. As stated in 3.4, the glide assimilation rule only applies to the /uw/ and /ij/ sequences if they are followed by a non-glide consonant. Consequently, this rule does not target the finally weak VNs of this pattern because they have the underlying shape |CuC**uwG**at-an|. For example, the infix /uw/ in the finally-weak VN *ʔux**uw**wat-an* 'brotherhood, accusative/indefinite form' does not undergo the glide assimilation rule because it is followed by the glide /w/; thus the surface representation of this VN remains the same as its underlying representation.

3.33. The derivation of weak VNs of the pattern |$C_1aC_2i:C_3at+an$|

The derivation of the 3 weak VNs of this pattern involves applying the ablaut and metathesis rules to their verbal stems and adding the infix /ij/ between their second and third radicals and the accusative/indefinite suffix /an/ to them. In addition to these rules, the two initially-weak VNs of this pattern, which are listed in Table 5.14 in the appendices, undergo the glide assimilation rule which causes their infix /ij/ to surfaces as /i:/ (e.g. *waq**ij**^{c}at-an* → *waq**i:**^{c}at-an* 'incident, accusative/indefinite form'). On the other hand, the infix /ij/ in the finally-weak VN of this pattern *ʔað**ij**jat-an* 'harm, accusative/indefinite form', as shown in Table 5.65 in the appendices, does not undergo the glide assimilation rule because it is followed by the medial glide /j/ rather than by a sound that have the [consonantal] feature which results in retaining its underlying form.

3.34. The derivation of weak VNs of the pattern |$C_1ajC_2C_3u:C_3at+an$|

The 10 medially-weak VNs which are listed in Table 5.27 in the appendices have the surface shape |$C_1aC_2C_3u:C_3at+an$| (e.g. *dajmu:mat-an* 'permanence, accusative/indefinite form'). The underlying representations of these VNs are formed through the application of the ablaut and metathesis rules to their verbal stems (C_1C_2**V**C_3→ C_1C_2**a**C_3→ C_1**a**C_2C_3), reduplicating their third radical ($C_1aC_2C_3$→ $C_1aC_2C_3$**C_3**), inserting the infixes /j/ and /uw/ between their radicals ($C_1aC_2C_3C_3$→ C_1**j**C_2C_3**uw**C_3) and adding the suffixes /at/ and /an/ to the resultant sequence ($C_1ajC_2C_3uwC_3$→ $C_1ajC_2C_3uwC_3$**at-an**).

Postulating that underlying representations of these VNs are of the shape |$C_1ajC_2C_3uwC_3$at-an| instead of |$C_1aC_2C_3uwC_3$at-an| is in conformity with Ibin Jinni (1954, 10-15). In order to clearly present his argument, it should be indicated that according to him, the infix /u:/ appears in the underlying and surface forms of these VNs. On the other hand, the underlying form of this infix is proposed to be /uw/ in the present study and it surfaces as /u:/ through the application of the glide assimilation rule. Accordingly, Ibin Jinni (1954) assumed that the underlying representations of these VNs are of the shape |$C_1ajC_2C_3u:C_3$at-an|.

He argued that the second radical, i.e. |C_2|, of the VNs of this pattern is a glide because all the VNs which have this pattern are medially-weak and maintained that the medial radical in the underlying representations of these VNs might be a /w/ or a /j/, even though this radical is always realized as a /w/ in their surface forms. This was attributed to the assumption that the glide /w/ in these VNs is subjected to *ʔalʔi^{c}la:l bilqalb* which results in substituting it with a /j/ because it is preceded by the infix /j/ (C_1a**jw**C_3u:C_3at-an→C_1a**jj**C_3u:C_3at-an).

Ibin Jinni (1954) asserted that the form |$C_1ajjC_3u:C_3$at-an| was the surface form of these VNs in Old Arabic and cited a poem in which this form of these VNs was used in that variety of Arabic. This form was subsequently affected by a deletion rule which resulted in the deletion of its medial radical and this produced its current surface representation |$C_1ajC_3u:C_3$at-an|. The deletion of the /j/ from

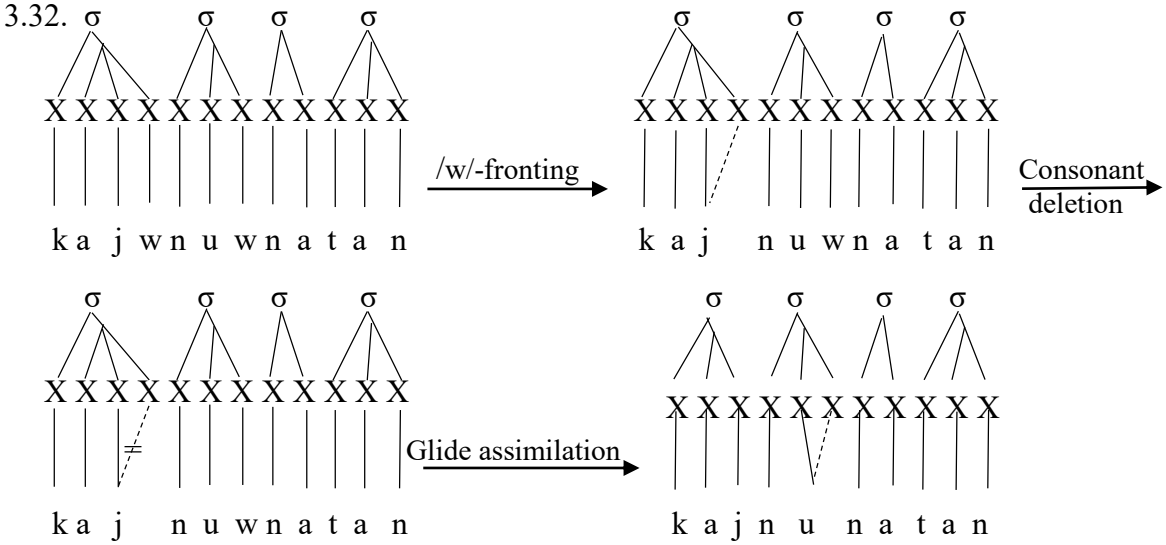
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|C_1ajjC_3u:C_3at-an| can be straightforwardly accounted for in the adopted model of phonology because the consonant cluster |jjC_3| in this form is subjected to the consonant deletion rule, as stated by Brame (1970, 410) and shown in 3.31. This rule deletes the medial consonant from the consonant clusters which consist of three consonants (CCC→C∉C). Applying this rule to the sequence |jjC_3| results in the deletion of its medial /j/ and accounts for the surface form of |C_1ajjC_3u:C_3at-an|, i.e. |C_1ajC_3u:C_3at-an|.

3.31. C→Ø/ C__C

One can notice that Ibin Jinni's (1954) proposal is supported by historical evidence and it accounts for the alternations between the /w/ and the /j/ in this VN pattern, hence it is considered plausible in the present study. In line with this proposal, the underlying representation of the VN *kajnu:nat-an* 'existence, accusative, indefinite form' is assumed to be *kajwnuwnat-an.* The surface representation of this VN is derived from its underlying representation by assimilating the medial glide /w/ to the infix /j/ through the /w/-fronting rule ((*kaj**w**nuwnat-an*→ *kaj**j**nuwnat-an*), deleting the medial /j/ from the consonant cluster /**jj**n/ through the consonant deletion rule (*kajjnuwnat-an*→ *kajnuwnat-an*) and changing the infix /uw/ to /u:/ through the glide assimilation rule (*kajn**uw**nat-an*→ *kajn**u:**nat-an*). This is presented in 3.32.

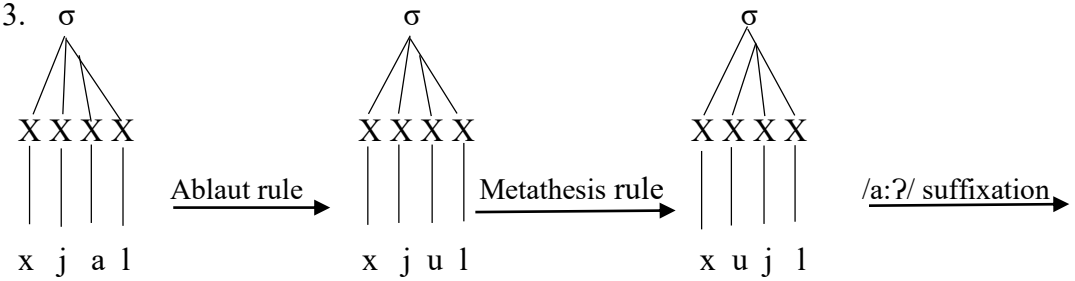
3.32.



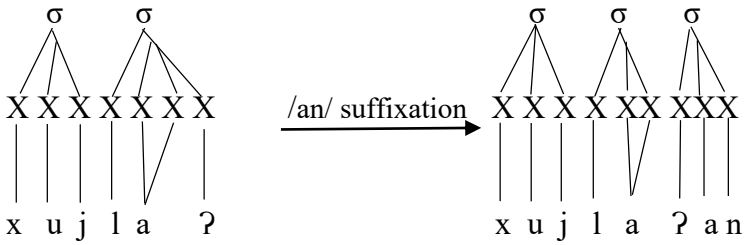
3.35. The derivation of weak VNs of the pattern |C_1uC_2C_3a:ʔ+an|

The weak VN *xujla:ʔ-an* 'arrogance, accusative/indefinite form', which is presented in Table 5.40 in the appendices, has the pattern |C_1uC_2C_3a:ʔ+an|. The derivation of this VN from *xjal*, i.e. the verbal stem of its corresponding imperfective verb *ja-xa:l* 'he becomes arrogant', involves changing its stem vowel to /u/ through the ablaut rule (xj**a**l→xj**u**l), switching the places of the stem vowel and the consonant that precedes it through the vowel metathesis rule (x**ju**l→x**uj**l) and adding the suffixes /a:ʔ/ (xujl→xujl**a:ʔ** 'arrogance') and /an/ (xujla:ʔ→xujla:ʔ-**an** 'arrogance, accusative/indefinite form') to it. The autosegmental representation of this derivational process is presented in 3.33.

3.33.



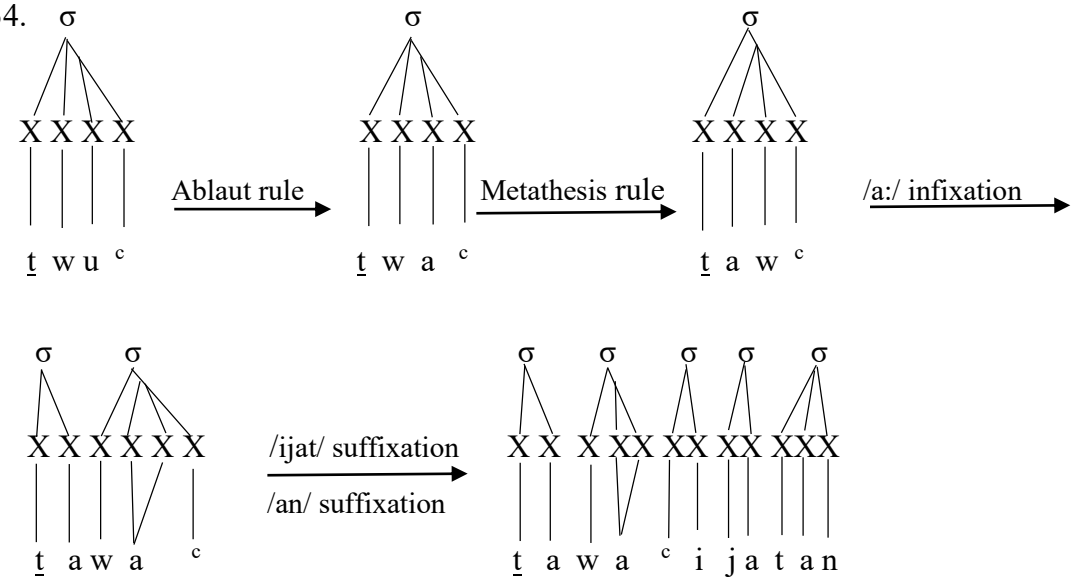
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3.36. The derivation of weak VNs of the pattern |$C_1aC_2a:C_3ijat+an$|

There is one weak VN of the pattern |$C_1aC_2a:C_3ijat+an$|. This VN, as shown in Table 5.41 in the appendices, is the medially-weak VN *t̲awa:ᶜijat-an* 'willingness, accusative/indefinite form'. The verbal stem of this VN is *t̲wuᶜ*, i.e. the stem of the imperfective verb *ja-t̲u:ᶜ* 'he complies with'. To form this VN, its verbal stem undergoes the ablaut (t̲w**u**ᶜ→t̲w**a**ᶜ) and the metathesis rules (t̲w**a**ᶜ→t̲**aw**ᶜ) and the infix /a:/ (t̲awᶜ→t̲aw**a:**ᶜ) as well as the suffixes /ijat/ (t̲awa:ᶜ→t̲awa:ᶜ**ijat**) and /an/ (t̲awa:ᶜijat→t̲awa:ᶜijat-**an**) are added to it. The autosegmental representation of the derivation of *t̲awa:ᶜijat-an* is shown in 3.34.

3.34.



4. Conclusion

The present study examined the derivation of 1222 weak VNs from their verbal stems within the nonlinear approach of phonology. Even though the analyzed VNs have 35 VN patterns, the derivation of their underlying representations generally involves following the same derivational process. This process involves applying the ablaut and metathesis rules to their verbal stems and the addition of specific affixes to them. The surface representations of these VNs are derived from their underlying representations through the application of a set of rules, such as glide elision, vocalic assimilation, /w/-fronting and glide assimilation, which mainly target the glides in these VNs due to their instability in certain phonological environments.

This study shows that utilizing a corpus for the analysis of derivational processes enables providing a comprehensive and thorough account of them and establishing a regular derivational pattern of the forms to which they apply. That is, because of the various patterns that are employed for deriving VNs from triconsonantal verbs, most of the grammarians proposed that the derivational

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processes of these nouns are irregular in the sense that they follow no specific rules for their derivation (e.g. Al-Rajihi 1984, Al-Faxiri 1996, Al-Samurrai 2013). However, due to conducting this analysis on the basis of a corpus, a regular derivational pattern of these VNs is established.

The X-slot and feature geometry models of the nonlinear approach are proved to provide adequate and simple representations of the examined phonological processes. The autonomy given to elements on different tiers in the X-slot model of CV phonology enables providing a simple account of the phonological processes that target the analyzed VNs and the lack of specification of the timing slots in this model for the feature [±consonantal] enables accounting straightforwardly for the phonological processes, such as the glide assimilation process, where the timing slots of consonants attaches to vowels and vice versa.

The feature geometry model is found to offer a phonetically natural representation of the assimilation processes, such as the vocalic assimilation, /w/-to-/j/, vowel assimilation and /w/-fronting processes, which target the analyzed NVs in the course of their derivation. This is ascribed to the relative degree of independency given to phonetic features in this model which allows representing assimilation as a spreading process in which a feature from one segment is acquired by a neighboring segment or as a delinking process in which a feature is delinked from one segment to make it similar to a neighboring segment.

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Appendices

Appendix (A): Initially-weak VNs

Table 5.1: Initially-weak VNs of the pattern $C_1aC_2C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5525	w ʔ d	jaʔid	to bury alive	waʔdan
2	5527	w ʔ m	jawʔam	to agree with	waʔman
3	5539	w b q	jabiq	to perish	wabqan
4	5540	w b l	jabil	to rain heavily	wablan
5	5541	w t d	jatid	to wedge	watdan
6	5542	w t r	jatir	to hold back	watran
7	5545	w θ b	jaθib	to jump	waθban
8	5548	w θ n	jaθin	to settle	waθnan
9	5499	w dʒ b	jadʒib	to fall down to be imperative	wadʒban
10	5550	w dʒ d	jadʒid	to come across	wadʒdan
11	5551	w dʒ z	jadʒiz	to be brief	wadʒzan
12	5552	w dʒ s	jadʒis	to be hidden to fear	wadʒsan
13	5554	w dʒ f	jadʒif	to hurry up	wadʒfan
14	5556	w dʒ m	jadʒim	to be speechless	wadʒman
15	5558	w dʒ h	jadʒih	to hit one's face	wadʒhan
16	5559	w h d	jahid	to be alone	wahdan
17	5565	w x z	jaxiz	to pierce	waxzan
18	5571	w d ˤ	jadaˤ	to leave	wadˤan
19	5578	w r d	jarid	to arrive	wardan
20	5582	w r ˤ	jaraˤ	to be devout	warˤan
21	5583	w r f	jarif	to expand	warfan
22	5584	w r q	jariq	to put forth leaves	warqan
23	5585	w r k	jarik	to have large hips	warkan
24	5592	w z r	jazir	to sin	wazran
25	5594	w z ˤ	jaziˤ	to stop	wazˤan
26	5596	w z n	jazin	to weigh	waznan
27	5600	w s t	jasit	to be centered	wastan
28	5602	w s q	jasiq	to envelop	wasqan
29	5604	w s m	jasim	to mark	wasman
30	5608	w ʃ dʒ	jaʃidʒ	to intertwine	waʃdʒan
31	5611	w ʃ k	jawʃuk	to be about to	waʃkan
32	5613	w ʃ m	jaʃim	to tattoo	waʃman
33	5618	w s f	jasif	to describe	wasfan
34	5619	w s l	jasil	to connect to treat good	waslan
35	5620	w s m	jasim	to disgrace	wasman
36	5625	w d ˤ	jadaˤ	to humiliate to put	wadˤan
37	5626	w d m	jadim	to put on the cutting board	wadman
38	5627	w d n	jading	to weave	wadnan
39	5628	w t ʔ	jataʔ	to be simple to step	watʔan
40	5630	w t d	jatid	to affirm	watdan
41	5632	w t s	jatis	to break	watsan
42	5634	w t n	jatin	to inhabit	watnan
43	5638	w ˤ b	jaˤib	to collect	waˤban
44	5640	w ˤ d	jaˤid	to promise	waˤdan
45	5641	w ˤ r	jaˤir	to be bumpy	waˤran
46	5642	w ˤ z	jaˤiz	to designate	waˤzan
47	5643	w ˤ ð	jaˤið	to preach	waˤðan

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48	5644	w ᶜ k	jaᶜik	to be in pain	waᶜkan
49	5648	w ɣ r	jaɣir	to be filled with hatred	waɣran
50	5649	w ɣ l	jaɣil	to intrude upon	waɣlan
51	5651	w f d	jafid	to arrive at	wafdan
52	5652	w f r	jafir	to increase	wafran
53	5654	w f q	jafiq	to be right	wafqan
54	5656	w q b	jaqib	to darken	waqban
55	5657	w q t	jaqit	to time	waqtan
56	5659	w q d	jaqid	to inflame	waqdan
57	5663	w q ᶜ	jaqaᶜ	to happen to appear to fall	waqᶜan
58	5664	w q f	jaqif	to inform to stop	waqfan
59	5672	w k z	jakiz	to hit	wakzan
60	5673	w k s	jakis	to decrease	waksan
61	5675	w k f	jakif	to flow	wakfan
62	5676	w k l	jakil	to delegate	waklan
63	5682	w l ɣ	jalaɣ	to drink	walɣan
64	5685	w l h	jalih	to grieve	walhan
65	5690	w m d	jamid	to twinkle	wamdan
66	5694	w h b	jahab	to bestow	wahban
67	5695	w h dʒ	jahidʒ	to inflame	wahdʒan
68	5698	w h m	jahim	to imagine	wahman
69	5699	w h n	jahin	to be weak	wahnan
70	5709	j ʔ s	jajʔas jajʔis	to lose hope	jaʔsan
71	5725	j t m	jajtim	to orphan	jatman
72	5739	j s r	jajsar	to become easy	jasran
73	5743	j ᶜ r	jajᶜar jajᶜir	to shout	jaᶜran
74	5749	j f x	jajfax	to hit on the fontanelle	jafxan
75	5754	j q n	jajqan	to believe with certainty	jaqnan
76	5757	j m n	jajmin	to turn right	jamnan

Table 5.2: Initially-weak VNs of the pattern $C_1uC_2u{:}C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5539	w b q	jabiq	to perish	wubu:qan
2	5540	w b l	jabil	to rain heavily	wubu:lan
3	5545	w θ b	jaθib	to jump	wuθu:ban
4	5547	w θ q	jaθiq	to trust	wuθu:qan
5	5499	w dʒ b	jadʒib	to fall down to be imperative	wudʒu:ban
6	5550	w dʒ d	jadʒid	to know	wudʒu:dan
7	5551	w dʒ z	jadʒiz	to be brief	wudʒu:zan
8	5602	w s q	jasiq	to envelop	wusu:qan
9	5554	w dʒ f	jadʒif	to hurry up	wudʒu:fan
10	5556	w dʒ m	jadʒim	to be speechless	wudʒu:man
11	5559	w h d	jahid	to be alone	wuhu:dan
12	5578	w r d	jarid	to arrive	wuru:dan
13	5616	w s b	jasib	to be consistent	wusu:ban
14	5619	w s l	jasil	to arrive	wusu:lan
15	5624	w d h	jadah	to be clear	wudu:han
16	5636	w ð b	jaðib	to be persistent	wuðu:ban
17	5641	w ᶜ r	jaᶜir	to be bumpy	wuᶜu:ran
18	5649	w ɣ l	jaɣil	to intrude upon to delve into	wuɣu:lan

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19	5651	w f d	jafid	to arrive at	wufu:dan
20	5652	w f r	jafir	to increase	wufu:ran
21	5656	w q b	jaqib	to darken	wuqu:ban
22	5659	w q d	jaqid	to inflame	wuqu:dan
23	5663	w q ᶜ	jaqaᶜ	to happen to appear to fall to insult	wuqu:ᶜan
24	5664	w q f	jaqif	to stand up	wuqu:fan
25	5671	w k r	jakir	to nest	wuku:ran
26	5676	w k l	jakil	to delegate	wuku:lan
27	5679	w l dʒ	jalidʒ	to enter	wulu:dʒan
28	5682	w l ɣ	jalaɣ	to drink	wulu:ɣan
29	5724	j b s	jajbas jajbis	to be dry	jubu:san
30	5750	j f ᶜ	jajfaᶜ	to be young	jufu:ᶜan
31	5760	j n ᶜ	jajnaᶜ	to become ripe	junu:ᶜan

Table 5.3: Initially-weak VNs of the pattern $C_1aC_2aC_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5535	w b ʔ	jawbaʔ	to have an epidemic	wabaʔan
2	5537	w b r	jawbar	to have a lot of fur	wabaran
3	5566	w x t	jaxit	to become gray-haired	waxatan
4	5575	w ð r	jaðar	to leave	waðaran
5	5582	w r ᶜ	jaraᶜ	to be devout	waraᶜan
6	5582	w r ᶜ	jawraᶜ jaraᶜ	to be devout	waraᶜan
7	5587	w r m	Jaram jawram	to become swollen	waraman
8	5598	w s x	jawsax	to be dirty	wasaxan
9	5616	w s b	jawsab	to be sick	wasaban
10	5658	w q h	jawqah	to be rude	waqahan
11	5661	w q r	jaqir	to be deaf	waqaran
12	5671	w k r	jakir	to nest	wakaran
13	5678	w l t	jalit	to decrease	walatan
14	5681	w l ᶜ	jawlaᶜ	to love	walaᶜan
15	5685	w l h	jalih	to grieve	walahan
16	5688	w m ʔ	jamaʔ	to indicate	wamaʔan
17	5725	j t m	jajtim	to orphan	jataman
18	5739	j s r	jajsar	to be rich	jasaran
19	5750	j f ᶜ	jajfaᶜ	to be young	jafaᶜan
20	5753	j q ð	jajqað	to wake up	jaqaðan
21	5760	j n ᶜ	jajnaᶜ	to become ripe	janaᶜan

Table 5.4: Initially-weak VNs of the pattern $C_1iC_2C_3at$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5547	w θ q	jaθiq	to trust	θiqatan
2	5550	w dʒ d	jadʒid	to come across to agree with	dʒidatan
3	5559	w h d	jahid	to be alone	hidatan
4	5582	w r ᶜ	jaraᶜ	to be devout	riᶜatan
5	5582	w r ᶜ	jawraᶜ jaraᶜ	to be devout	riᶜatan
6	5596	w z n	jazin	to weigh	zinatan
7	5601	w s ᶜ	jasaᶜ	to encompass	siᶜatan
8	5605	w s n	jawsan	to sleep	sinatan
9	5618	w s f	jasif	to describe	sifatan

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10	5619	w s̲ l	jas̲il	to arrive to connect to treat good	s̲ilatan
11	5620	w s̲ m	jas̲im	to disgrace	s̲imatan
12	5625	w d̲ ᶜ	jada̲ᶜ	to humiliate	di̲ᶜatan
13	5640	w ᶜ d	jaᶜid	to promise	ᶜidatan
14	5643	w ᶜ ð̲	jaᶜið̲	to preach	ᶜið̲atan
15	5541	w t d	jatid	to wedge	tidatan
16	5542	w t r	jatir	to hold back	tiratan
17	5652	w f r	jafir	to increase	wifratan
18	5694	w h b	jahab	to bestow	hibatan

Table 5.5: Initially-weak VNs of the pattern $C_1aC_2a{:}C_3at{+}an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5535	w b ʔ	jawbuʔ	to have an epidemic	waba:ʔatan
2	5540	w b l	jawbul	to have bad consequences	waba:latan
3	5547	w θ q	jaθiq	to trust	waθa:qatan
4	5592	w z r	jazir	to become a minister	waza:ratan
5	5600	w s t̲	jasit̲	to mediate	wasa:t̲atan
6	5611	w ʃ k	jawʃuk	to be about to	waʃa:katan
7	5622	w d̲ ʔ	jawd̲uʔ	to be clean	wad̲a:ʔatan
8	5647	w ɣ d	jawɣid	to be a scamp	waɣa:datan
9	5661	w q r	jawqur	to be calm	waqa:ratan
10	5709	j ʔ s	jajʔas jajʔis	to lose hope	jaʔa:satan
11	5739	j s r	jajsur	to become easy	jasa:ratan
12	5753	j q ð̲	jajqað̲	to wake up	jaqa:ð̲atan

Table 5.6: Initially-weak VNs of the pattern $C_1aC_2i{:}C_3{+}an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5499	w dʒ b	jadʒib	to beat rapidly	wadʒi:ban
2	5545	w θ b	jaθib	to jump	waθi:ban
3	5554	w dʒ f	jadʒif	to hurry up	wadʒi:fan
4	5583	w r f	jarif	to expand	wari:fan
5	5608	w ʃ dʒ	jaʃidʒ	to intertwine	waʃi:dʒan
6	5690	w m d̲	jamid̲	to twinkle	wami:d̲an
7	5695	w h dʒ	jahidʒ	to inflame	wahi:dʒan
8	5640	w ᶜ d	jaᶜid	to threaten	waᶜi:dan
9	5675	w k f	jakif	to flow	waki:fan
10	5754	j q n	jajqan	to believe with certainty	jaqi:nan

Table 5.7: Initially-weak VNs of the pattern $C_1aC_2aC_3a{:}n{+}an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5499	w dʒ b	jadʒib	to beat rapidly	wadʒaba:nan
2	5545	w θ b	jaθib	to jump	waθaba:nan
3	5552	w dʒ s	jadʒis	to be hidden to fear	wadʒasa:nan
4	5649	w ɣ l	jaɣil	to intrude upon	waɣala:nan
5	5659	w q d	jaqid	to inflame	waqada:nan
6	5675	w k f	jakif	to flow	wakafa:nan
7	5682	w l ɣ	jalaɣ	to drink	walaɣa:nan
8	5685	w l h	Jalih jawlah	to grieve	walaha:nan
9	5695	w h dʒ	jahidʒ	to inflame	wahadʒa:nan

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Table 5.8: Initially-weak VNs of the pattern $C_1aC_2a:C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5535	w b ʔ	jawbuʔ	to have an epidemic	waba:ʔan
2	5535	w b ʔ	jawbaʔ	to have an epidemic	waba:ʔan
3	5540	w b l	jawbul	to have bad consequences	waba:lan
4	5661	w q r	jaqir	to be calm	waqa:ran
5	5661	w q r	jawqur	to be calm	waqa:ran
6	5739	j s r	jajsar	to dispense with	jasa:ran

Table 5.9: Initially-weak VNs of the pattern $C_1uC_2C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5550	w dʒ d	jadʒid	to have money	wudʒdan
2	5724	j b s	jajbas jajbis	to be dry	jubsan
3	5725	j t m	jajtim	to orphan	jutman
4	5739	j s r	jajsur	to become easy	jusran
5	5739	j s r	jajsar	to dispense with	jusran
6	5757	j m n	jajmun	to make blessed to be blessed	jumnan

Table 5.10: Initially-weak VNs of the pattern $C_1aC_2C_3$at+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5499	w dʒ b	jadʒib	to have a meal	wadʒbatan
2	5559	w h̲ d	jah̲id	to be alone	wah̲datan
3	5644	w ᶜk	jaᶜik	to be in pain	waᶜkatan
4	5753	j q ð̲	jajqað̲	to wake up	jaqað̲atan

Table 5.11: Initially-weak VNs of the pattern $C_1iC_2a:C_3$at+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5577	w r θ	jariθ	to inherit	wira:θatan
2	5592	w z r	jazir	to become a minister	wiza:ratan
3	5651	w f d	jafid	to arrive at	wifa:datan
4	5680	w l d	jalid	to give birth	wila:datan

Table 5.12: Initially-weak VNs of the pattern $C_1iC_2C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5577	w r θ	jariθ	to inherit	wirθan
2	5577	w r θ	jariθ	to inherit	ʔirθan
3	5592	w z r	jazir	to sin	wizran

Table 5.13: Initially-weak VNs of the pattern $C_1aC_2aC_3$at+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5601	w s ᶜ	jasaᶜ	to encompass	saᶜatan
2	5625	w d̲ ᶜ	jad̲aᶜ	to humiliate	d̲aᶜatan

Table 5.14: Initially-weak VNs of the pattern $C_1aC_2i:C_3$at+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5625	w d̲ ᶜ	jad̲aᶜ	to deprive	wad̲i:ᶜatan
2	5663	w q ᶜ	jaqaᶜ	to insult	waqi:ᶜatan

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Table 5.15: Initially-weak VNs of the pattern $C_1iC_2C_3a{:}n+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5550	w dʒ d	jadʒid	to find	widʒda:nan

Table 5.16: Initially-weak VNs of the pattern $C_1uC_2C_3a.n+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5611	w ʃ k	jawʃuk	to be about to	wuʃka:nan

Table 5.17: Initially-weak VNs of the pattern $ma+C_1C_2iC_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5550	w dʒ d	jadʒid	to hate	mawdʒidatan

Appendix (B): Medially-weak VNs

Table 5.18: Medially-weak VNs of the pattern $C_1aC_2C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	335	ʔ w b	jaʔu:b	to come back	ʔawban
2	345	ʔ w d	jaʔu:d	to feel tired	ʔawdan
3	361	ʔ w l	jaʔu:l	to be handed over to	ʔawlan
4	387	ʔ j d	jaʔi:d	to return	ʔajdan
5	392	ʔ j n	jaʔi:n	to draw near	ʔajnan
6	804	b w ʔ	jabu:ʔ	to deserve	bawʔan
7	812	b w h	jabu:h	to reveal	bawhan
8	813	b w x	jabu:x	to become silly	bawxan
9	817	b w r	jabu:r	to leave uncultivated	bawran
10	822	b w s	jabu:s	to kiss	bawsan
11	829	b w ˤ	jabu:ˤ	to sell	bawˤan
12	834	b w l	jabu:l	to urinate	bawlan
13	855	b j d	jabi:d	to diminish	bajdan
14	871	b j d	jabi:d	to lay eggs	bajdan
15	873	b j ˤ	jabi:ˤ	to sell	bajˤan
16	8793	b j n	jabi:n	to leave	bajnan
17	1006	t w b	jatu:b	to repent	tawban
18	1013	t w q	jatu:q	to long	tawqan
19	1018	t w h	jatu:h	to get lost	tawhan
20	1022	t j h	jati:h	to make possible for	tajhan
21	1029	t j m	jati:m	to be in love	tajman
22	1079	θ w b	jaθu:b	to come back to one's senses	θawban
23					
24	1261	dʒ w b	jadʒu:b	to wander	dʒawban
25	1267	dʒ w r	jadʒu:r	to be unjust	dʒawran
26	1269	dʒ w z	jadʒu:z	to be accepted	dʒawzan
27	1264	dʒ w d	jadʒu:d	to exist in large numbers or amounts	dʒawdan
28	1270	dʒ w s	jadʒu:s	to keep coming back	dʒawsan
29	1271	dʒ w c	jadʒu:c	to be hungry	dʒawˤan
30	1275	dʒ w l	jadʒu:l	to roam	dʒawlan
31	1287	dʒ j ʃ	jadʒi:ʃ	to quake	dʒajʃan
32	1288	dʒ j f	jadʒi:f	to rot	dʒajfan

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33	1497	h w b	jahu:b	to sin	hawban
34	1500	h w ð	jahu:ð	to keep	hawðan
35	1501	h w r	jahu:r	to come back	hawran
36	1502	h w z	jahu:z	to possess	hawzan
37	1503	h w ʃ	jahu:ʃ	to stop	hawʃan
38	1504	h w s	jahu:s	to narrow one's eyes	hawsan
39	1507	h w t	jahu:t	to guard	hawtan
40	1510	h w k	jahu:k	to contrive	hawkan
41	1511	h w l	jahu:l	to elapse to stop	hawlan
42	1513	h̲ w m	jah̲u:m	to move in circles	h̲awman
43	1518	h̲ j d	jah̲i:d	to alter one's course	h̲ajdan
44	1519	h̲ j r	jah̲a:r	to be confused	h̲ajran
45	1520	h̲ j z	jah̲i:z	to possess	h̲ajzan
46	1523	h̲ j s̲	jah̲i:s̲	to try to escape	h̲ajs̲an
47	1524	h̲ j d̲	tah̲i:d̲	to menstruate	h̲ajd̲an
48	1526	h̲ j f	jah̲i:f	to be unfair	h̲ajfan
49	1527	h̲ j q	jah̲i:q	to confine	h̲ajqan
50	1528	h̲ j k	jah̲i:k	to weave	h̲ajkan
51	1530	h̲ j n	jah̲i:n	to approach	h̲ajnan
52	1705	x w d̲	jaxu:d̲	to go through	xawd̲an
53	1706	x w f	jaxa:f	to be scared	xawfan
54	1708	x w n	jaxu:n	to betray	xawnan
55	1711	x j r	jaxi:r	to pick	xajran
56	1882	d w x	jadu:x	to feel dizzy	dawxan
57	1884	d w r	jadu:r	to keep moving in circles	dawran
58	1887	d w s	jadu:s	to step on	dawsan
59	1892	d w l	jadu:l	to be changed	dawlan
60	1896	d w m	jadu:m	to persist	dawman
61	1898	d w n	jadu:n	to be despicable	dawnan
62	1904	d j θ	jadi:θ	to lack jealousy	dajθan
63	1922	d j n	jadi:n	to borrow	dajnan
64	1984	ð w b	jaðu:b	to melt	ðawban
65	1985	ð w d	jaðu:d	to prevent	ðawdan
66	1986	ð w q	jaðu:q	to experience	ðawqan
67	1993	ð j ᶜ	jaði:ᶜ	to be widespread	ðajᶜan
68	1994	ð j l	jaði:l	to have a tail	ðajlan
69	2228	r w d̲	jaru:d̲	to train	rawd̲an
70	2229	r w ᶜ	jaru:ᶜ	to be scared	rawᶜan
71	2230	r w ɣ	jaru:ɣ	to elude	rawɣan
72	2231	r w q	jaru:q	to be pure	rawqan
73	2234	r w m	jaru:m	to aspire to	rawman
74	2243	r j b	jari:b	to make skeptical	rajban
75	2244	r j θ	jari:θ	to slow down	rajθan
76	2246	r j h̲	jari:h̲	to smell	rajh̲an
77	2247	r j ʃ	jari:ʃ	to have feathers	rajʃan
78	2248	r j ᶜ	jari:ᶜ	to increase	rajᶜan
79	2250	r j q	jari:q	to be poured	rajqan
80	2252	r j m	jari:m	to depart	rajman
81	2253	r j n	jari:n	to cover	rajnan
82	2370	z w b	jazu:b	to run	zawban
83	2373	z w h̲	jazu:h̲	to dislocate	zawh̲an
84	2374	z w d	jazu:d	to prepare supplies	zawdan
85	2375	z w r	jazu:r	to visit	zawran
86	2377	z w ᶜ	jazu:ᶜ	to be removed	zawᶜan

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87	2378	z w ɣ	jazu:ɣ	to deviate	zawɣan
88	2382	z w l	jazu:l	to cease to exist	zawlan
89	2383	z w m	jazu:m	to get angry	zawman
90	2386	z j t	jazi:t	to oil	zajtan
91	2390	z j ḥ	jazi:ḥ	to disappear	zajḥan
92	2391	z j d	jazi:d	to increase	zajdan
93	2394	z j ṭ	jazi:ṭ	to become noisy	zajṭan
94	2395	z j ɣ	jazi:ɣ	to swerve	zajɣan
95	2396	z j f	jazi:f	to act in a dishonest way	zajfan
96	2399	z j n	jazi:n	to beautify	zajnan
97	2666	s w x	jasu:x	to sink	sawxan
98	2669	s w r	jasu:r	to get angry	sawran
99	2672	s w ṭ	jasu:ṭ	to lash	sawṭan
100	2673	s w ɣ	jasu:ɣ	to be permitted	sawɣan
101	2677	s w q	jasu:q	to lead	sawqan
102	2678	s w k	jasu:k	to rub	sawkan
103	2682	s w m	jasu:m	to wander	sawman
104	2687	s j b	jasi:b	to flow	sajban
105	2692	s j ḥ	jasi:ḥ	to flow to cruise	sajḥan
106	2693	s j x	jasi:x	to sink	sajxan
107	2695	s j r	jasi:r	to walk	sajran
108	2703	s j ɣ	jasi:ɣ	to taste good	sajɣan
109	2707	s j l	jasi:l	to stream	sajlan
110	2916	ʃ w b	jaʃu:b	to blemish	ʃawban
111	2921	ʃ w ṭ	jaʃu:ṭ	to kick	ʃawṭan
112	2923	ʃ w f	jaʃu:f	to see	ʃawfan
113	2925	ʃ w q	jaʃu:q	to yearn	ʃawqan
114	2926	ʃ w k	jaʃa:k	to become strong	ʃawkan
115	2926	ʃ w k	jaʃu:k	to be pierced with a thorn	ʃawkan
116	2928	ʃ w l	jaʃu:l	to become high	ʃawlan
117	2931	ʃ w h	jaʃu:h	to be ugly	ʃawhan
118	2934	ʃ j b	jaʃi:b	to have grey hair	ʃajban
119	2937	ʃ j x	jaʃi:x	to become old	ʃajxan
120	2938	ʃ j d	jaʃi:d	to build	ʃajdan
121	2941	ʃ j ṭ	jaʃi:ṭ	to burn	ʃajṭan
122	2947	ʃ j l	jaʃi:l	to pick up	ʃajlan
123	2948	ʃ j m	jaʃi:m	to have a mole	ʃajman
124	2949	ʃ j n	jaʃi:n	to disgrace	ʃajnan
125	3073	ṣ w b	jaṣu:b	to be correct	ṣawban
126	3074	ṣ w t	jaṣu:t	to yell	ṣawtan
127	3078	ṣ w r	jaṣu:r	to direct	ṣawran
128	3079	ṣ w ʿ	jaṣu:ʿ	to measure	ṣawʿan
129	3080	ṣ w ɣ	jaṣu:ɣ	to mold	ṣawɣan
130	3082	ṣ w l	jaṣu:l	to assault	ṣawlan
131	3085	ṣ w m	jaṣu:m	to fast	ṣawman
132	3087	ṣ w n	jaṣu:n	to protect	ṣawnan
133	3089	ṣ j ḥ	jaṣi:ḥ	to scream	ṣajḥan
134	3090	ṣ j d	jaṣi:d	to hunt	ṣajdan
135	3092	ṣ j r	jaṣi:r	to become	ṣajran
136	3095	ṣ j f	jaṣi:f	to stay in the summer	ṣajfan
137	3151	ḍ w ʔ	jaḍu:ʔ	to be lightened up	ḍawʔan
138	3152	ḍ w r	jaḍu:r	to be hungry	ḍawran
139	3154	ḍ w ʿ	jaḍu:ʿ	to smell good	ḍawʿan
140	3156	ḍ j r	jaḍi:r	to harm	ḍajran
141	3159	ḍ j f	jaḍi:f	to host	ḍajfan

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142	3160	d j q	jadi:q	to be narrow	dajqan
143	3161	d j m	jadi:m	to be unjust	dajman
144	3252	t w h	jatu:h	to go astray	tawhan
145	3258	t w ᶜ	jatu:ᶜ	to obey	tawᶜan
146	3259	t w f	jatu:f	to go around	tawfan
147	3260	t w q	jatu:q	to bear	tawqan
148	3261	t w l	jatu:l	to reach to grow longer	tawlan
149	3294	t j h	jati:h	to go astray	tajhan
150	3265	t j r	jati:r	to fly	tajran
151	3266	t j ʃ	jati:ʃ	to be headless	tajʃan
152	3267	t j ᶜ	jati:ᶜ	to obey	tajᶜan
153	3268	t j f	jati:f	to go around	tajfan
154	3269	t j q	jati:q	to bear	tajqan
155	3271	t j n	jati:n	to throw mud at	tajnan
156	3489	ᶜ w dʒ	jaᶜu:dʒ	to contort	ᶜawdʒan
157	3490	ᶜ w d	jaᶜu:d	to return	ᶜawdan
158	3491	ᶜ w ð	jaᶜu:ð	to seek protection	ᶜawðan
159	3493	ᶜ w z	jaᶜu:z	to miss	ᶜawzan
160	3495	ᶜ w s	jaᶜa:s	to be difficult	ᶜawsan
161	3496	ᶜ w d	jaᶜu:d	to compensate	ᶜawdan
162	3497	ᶜ w q	jaᶜu:q	to be stopped	ᶜawqan
163	3500	ᶜ w m	jaᶜu:m	to float	ᶜawman
164	3504	ᶜ j b	jaᶜi:b	to disfigure	ᶜajban
165	3505	ᶜ j θ	jaᶜi:θ	to ravage	ᶜajθan
166	3506	ᶜ j r	jaᶜi:r	to disgrace	ᶜajran
167	3508	ᶜ j ʃ	jaᶜi:ʃ	to live	ᶜajʃan
168	3510	ᶜ j f	jaᶜa:f jaᶜi:f	to hate	ᶜajfan
169	3511	ᶜ j q	jaᶜi:q	to stop	ᶜajqan
170	3512	ᶜ j l	jaᶜi:l	to become poor	ᶜajlan
171	3625	ɣ w r	jaɣu:r	to fall in	ɣawran
172	3628	ɣ w s	jaɣu:s	to dive	ɣawsan
173	3629	ɣ w t	jaɣu:t	to sink	ɣawtan
174	3631	ɣ w l	jaɣu:l	to destroy	ɣawlan
175	3633	ɣ j b	jaɣi:b	to absent oneself from	ɣajban
176	3634	ɣ j θ	jaɣi:θ	to help	ɣajθan
177	3633	ɣ j b	jaɣi:b	to absent oneself from	ɣajban
178	3634	ɣ j θ	jaɣi:θ	to help	ɣajθan
179	3637	ɣ j d	jaɣi:d	to disappear	ɣajdan
180	3638	ɣ j t	jaɣi:t	to sink	ɣajtan
181	3639	ɣ j ð	jaɣi:ð	to enrage	ɣajðan
182	3642	ɣ j l	jaɣi:l	to harm	ɣajlan
183	3643	ɣ j m	jaɣi:m	to be cloudy	ɣajman
184	3872	f w t	jafu:t	to pass	fawtan
185	3879	f w h	jafu:h	to spread a strong odor	fawhan
186	3880	f w r	jafu:r	to boil over	fawran
187	3882	f w z	jafu:z	to win	fawzan
188	3900	f w h	jafu:h	to utter	fawhan
189	3902	f j ʔ	jafi:ʔ	to return	fajʔan
190	3905	f j h	jafi:h	to spread a strong odor	fajhan
191	3916	f j d	jafi:d	to be filled with	fajdan

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192	4129	q w t	jaqu:t	to feed	qawtan
193	4131	q w d	jaqu:d	to lead	qawdan
194	4132	q w r	jaqu:r	to expand	qawran
195	4133	q w s	jaqu:s	to measure to bend	qawsan
196	4134	q w d̲	jaqu:d̲	to demolish	qawd̲an
197	4137	q w f	jaqu:f	to follow	qawfan
198	4138	q w q	jaqu:q	to cackle	qawqan
199	4141	q w l	jaqu:l	to speak	qawlan
200	4145	q w m	jaqu:m	to stand up	qawman
201	4148	q j ʔ	jaqi:ʔ	to vomit	qajʔan
202	4151	q j d	jaqi:d	to tie	qajdan
203	4154	q j s	jaqi:s	to measure	qajsan
204	4158	q j d̲	jaqi:d̲	to crack	qajd̲an
205	4159	q j ð̲	jaqi:ð̲	to become hot	qajð̲an
206	4160	q j q	jaqi:q	to crackle	qajqan
207	4161	q j l	jaqi:l	to nap	qajlan
208	4447	k w d	jaka:d	to be about to	kawdan
209	4451	k w z	jaku:z	to drink from a jug	kawzan
210	4473	k w n	jaku:n	to exist	kawnan
211	4480	k j d	jaki:d	to deceive	kajdan
212	4483	k j s	jaki:s	to be wise	kajsan
213	4487	k j l	jaki:l	to weigh	kajlan
214	4494	k j n	jaki:n	to be weak	kajnan
215	4641	l w θ	jalu:θ	to dirty	lawθan
216	4644	l w h̲	jalu:h̲	to appear	lawh̲an
217	4645	l w ð	jalu:ð	to escape	lawðan
218	4649	l w z	jalu:z	to ask for protection	lawzan
219	4651	l w t̲	jalu:t̲	to cling to	lawt̲an
220	4653	l w ˤ	jalu:ˤ	to be impatient	lawˤan
221	4655	l w f	jalu:f	to chew	lawfan
222	4656	l w k	jalu:k	to chew	lawkan
223	4660	l w m	jalu:m	to blame	lawman
224	4666	l j t	jali:t	to deprive from	lajtan
225	4675	l j q	jali:q	to be fit for	lajqan
226	4945	m w t	jamu:t	to die	mawtan
227	4947	m w dʒ	jamu:dʒ	to surge	mawdʒan
228	4949	m w r	jamu:r	to surge	mawran
229	4968	m w h	jamu:h	to be rich in water	mawhan
230	4974	m j d	jami:d	to sway	majdan
231	4976	m j r	jami:r	to provide	majran
232	4977	m j z	jami:z	to distinguish	majzan
233	4978	m j s	jami:s	to strut	majsan
234	4979	m j t̲	jami:t̲	to move away from	majt̲an
235	4980	m j ˤ	jami:ˤ	to become fluid	majˤan
236	4990	m j l	jami:l	to deviate from	majlan
237	4996	m j h	jami:h	to be rich in water	majhan
238	5265	n w ʔ	janu:ʔ	to burden	nawʔan
239	5266	n w b	janu:b	to return	nawban
240	5269	n w h̲	janu:h̲	to moan	nawh̲an
241	5271	n w r	janu:r	to illuminate	nawran
242	5275	n w s	janu:s	to vacillate	nawsan
243	5276	n w ʃ	janu:ʃ	to take	nawʃan
244	5278	n w s̲	janu:s̲	to resort to	naws̲an
245	5279	n w t̲	janu:t̲	to be dependent on	nawt̲an
246	5281	n w f	janu:f	to rise	nawfan
247	5284	n w l	janu:l	to get	nawlan
248	5285	n w m	jana:m	to sleep	nawman
249	5290	n j ʔ	jani:ʔ	to be raw	najʔan

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250	5291	n j b	jani:b	to be unfortunate	najban
251	5296	n j r	jani:r	to line up	najran
252	5303	n j l	jana:l	to achieve	najlan
253	5480	h w d	jahu:d	to repent	hawdan
254	5482	h w r	jahu:r	to collapse	hawran
255	5484	h w ʃ	jahu:ʃ	to tremble	hawʃan
256	5486	h w l	jahu:l	to fear	hawlan
257	5488	h w n	jahu:n	to be weak	hawnan
258	5488	h w n	jahu:n	to be easy	hawnan
259	5494	h j b	jaha:b jahi:b	to fear	hajban
260	5496	h j dʒ	jahi:dʒ	to be agitated	hajdʒan
261	5510	h j d̲	jahi:d̲	to break	hajd̲an
262	5511	h j ᶜ	jahi:ᶜ	to be wide	hajᶜan
263	5512	h j f	jahi:f	to be slim	hajfan
264	5514	h j l	jahi:l	to disseminate	hajlan
265	5517	h j m	jahi:m	to wander	hajman

Table 5.19: Medially-weak VNs of the pattern $C_1aC_2aC_3a{:}n{+}an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	813	b w x	jabu:x	to become silly	bawaxa:nan
2	1013	t w q	jatu:q	to long	tawaqa:nan
3	1018	t w h	jatu:h	to get lost	tawaha:nan
4	1031	t j h	jati:h	to get lost	tajaha:nan
5	1079	θ w b	jaθu:b	to come back to one's senses	θawaba:nan
6	1080	θ w r	jaθu:r	to rebel	θawara:nan
7	1270	dʒ w s	jadʒu:s	to keep coming back	dʒawasa:nan
8	1275	dʒ w l	jadʒu:l	to roam	dʒawala:nan
9	1287	dʒ j ʃ	jadʒi:ʃ	to quake	dʒajaʃa:nan
10	1513	h̲ w m	jah̲u:m	to move in circles	h̲awama:nan
11	1518	h̲ j d	jah̲i:d	to alter one's course	h̲ajada:nan
12	1519	h̲ j r	jah̲a:r	to be confused	h̲ajara:nan
13	1716	x j l	jaxa:l	to assume	xajala:nan
14	1884	d w r	jadu:r	to keep moving in circles	dawara:nan
15	1984	ð w b	jaðu:b	to melt	ðawaba:nan
16	1986	ð w q	jaðu:q	to experience	ðawaqa:nan
17	1993	ð j ᶜ	jaði:ᶜ	to be widespread	ðajaᶜa:nan
18	2221	r w d	jaru:d	to lead	rawada:nan
19	2230	r w ɣ	jaru:ɣ	to elude	rawaɣa:nan
20	2231	r w q	jaru:q	to be pure	rawaqa:nan
21	2248	r j ᶜ	jari:ᶜ	to increase	rajaᶜa:nan
22	2370	z w b	jazu:b	to run	zawaba:nan
23	2373	z w h̲	jazu:h̲	to dislocate	zawah̲a:nan
24	2378	z w ɣ	jazu:ɣ	to deviate	zawaɣa:nan
25	2382	z w l	jazu:l	to cease to exist	zawala:nan
26	2390	z j h̲	jazi:h̲	to disappear	zajah̲a:nan
27	2395	z j ɣ	jazi:ɣ	to swerve	zajaɣa:nan
28	2666	s w x	jasu:x	to sink	sawaxa:nan
29	2687	s j b	jasi:b	to flow	sajaba:nan
30	2692	s j h̲	jasi:h̲	to flow	sajah̲a:nan
31	2693	s j x	jasi:x	to sink	sajaxa:nan
32	2707	s j l	jasi:l	to stream	sajala:nan
33	2928	ʃ w l	jaʃu:l	to become high	ʃawala:nan
34	2943	ʃ j ᶜ	jaʃi:ᶜ	to spread	ʃajaᶜa:nan
35	3082	s̲ w l	jas̲u:l	to assault	s̲awala:nan
36	3089	s̲ j h̲	jas̲i:h̲	to scream	s̲ajah̲a:nan

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37	3259	t̲ w f	jat̲u:f	to go around	t̲awafa:nan
38	3265	t̲ j r	jat̲i:r	to fly	t̲ajara:nan
39	3266	t̲ j ʃ	jat̲i:ʃ	to be headless	t̲jaʃa:nan
40	3505	ᶜ j θ	jaᶜi:θ	to ravage	ᶜajaθa:nan
41	3506	ᶜ j r	jaᶜi:r	to disgrace	ᶜajara:nan
42	3510	ᶜ j f	jaᶜa:f jaᶜi:f	to hate	ᶜajafa:nan
43	3879	f w h̲	jafu:h̲	to spread a strong odor	fawah̲a:nan
44	3880	f w r	jafu:r	to boil over	fawara:nan
45	3905	f j h̲	jafi:h̲	to spread a strong odor	fajah̲a:nan
46	3916	f j d̲	jafi:d̲	to be filled with	fajad̲a:nan
47	4675	l j q	jali:q	to be fit for	lajaqa:nan
48	4974	m j d	jami:d	to sway	majada:nan
49	4978	m j s	jami:s	to strut	majasa:nan
50	4990	m j l	jami:l	to deviate from	majala:nan
51	4947	m w dʒ	jamu:dʒ	to surge	mawadʒa:nan
52	5275	n w s	janu:s	to vacillate	nawasa:nan
53	5278	n w s̲	janu:s̲	to resort to	nawas̲a:nan
54	5496	h j dʒ	jahi:dʒ	to be agitated	hajadʒa:nan
55	5511	h j ᶜ	jahi:ᶜ	to be wide	hajaᶜa:nan
56	5517	h j m	jahi:m	to wander	hajama:nan

Table 5.20: Medially-weak VNs of the pattern $C_1iC_2a:C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	335	ʔ w b	jaʔu:b	to come back	ʔija:ban
2	345	ʔ w d	jaʔu:d	to feel tired	ʔija:dan
3	361	ʔ w l	jaʔu:l	to be handed over to	ʔija:lan
4	385	ʔ j s	jajaʔas	to give up	ʔija:san
5	1985	ð w d	jaðu:d	to prevent	ðija:dan
6	2221	r w d	jaru:d	to lead	rija:dan
7	2228	r w d̲	jaru:d̲	to train	rija:d̲an
8	2394	z j t̲	jazi:t̲	to become noisy	zija:t̲an
9	2677	s w q	jasu:q	to lead	sija:qan
10	2678	s w k	jasu:k	to brush teeth with the Siwak	siwa:kan
11	3085	s̲ w m	jas̲u:m	to fast	s̲ija:man
12	3087	s̲ w n	jas̲u:n	to protect	s̲ija:nan
13	3089	s̲ j h̲	jas̲i:h̲	to scream	s̲ija:h̲an
14	3151	d̲ w ʔ	jad̲u:ʔ	to be lightened up	d̲ija:ʔan
15	3491	ᶜ w ð	jaᶜu:ð	to seek protection	ᶜija:ðan
16	3496	ᶜ w d̲	jaᶜu:d̲	to compensate	ᶜija:d̲an
17	3510	ᶜ j f	jaᶜi:f	to hate	ᶜija:fan
18	4131	q w d	jaqu:d	to lead	qija:dan
19	4133	q w s	jaqu:s	to measure	qija:san
20	4145	q w m	jaqu:m	to stand up	qija:man
21	4154	q j s	jaqi:s	to measure	qija:san
22	4473	k w n	jaku:n	to exist	kija:nan
23	4645	l w ð	jalu:ð	to escape	liwa:ðan
24	4645	l w ð	jalu:ð	to escape	lija:ðan
25	4651	l w t̲	jalu:t̲	to be gay	liwa:t̲an
26	5496	h j dʒ	jahi:dʒ	to be agitated	hija:dʒan
27	5512	h j f	jaha:f	to be slim	hija:fan
28	5517	h j m	jahi:m	to be thirsty	hija:man

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Table 5.21: Medially-weak VNs of the pattern $C_1iC_2a{:}C_3at{+}an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1502	h̲ w z	jah̲u:z	to possess	h̲ija:zatan
2	1507	h̲ w t̲	jah̲u:t̲	to guard	h̲ija:t̲atan
3	1510	h̲ w k	jah̲u:k	to contrive	h̲ija:katan
4	1520	h̲ j z	jah̲i:z	to possess	h̲ija:zatan
5	1528	h̲ j k	jah̲i:k	to weave	h̲ija:katan
6	1708	x w n	jaxu:n	to betray	xija:natan
7	1715	x j t̲	jaxi:t̲	to sew	xija:t̲atan
8	1904	d j θ	jadi:θ	to lack jealousy	dija:θatan
9	1922	d j n	jadi:n	to believe in	dija:natan
10	2228	r w d̲	jaru:d̲	to train	rija:d̲atan
11	2391	z j d	jazi:d	to increase	zija:datan
12	2667	s w d	jasu:d	to prevail	sija:datan
13	2670	s w s	jasu:s	to rule	sija:satan
14	2677	s w q	jasu:q	to lead	sija:qatan
15	2692	s j h̲	jasi:h̲	to cruise	sija:h̲atan
16	2941	ʃ j t̲	jaʃi:t̲	to burn	ʃija:t̲atan
17	3087	s̲ w n	jas̲u:n	to protect	s̲ija:natan
18	3159	d̲ j f	jad̲i:f	to host	d̲ija:fatan
19	3080	s̲ w ɣ	jas̲u:ɣ	to mold	s̲ija:ɣatan
20	3498	ᶜ w l	jaᶜu:l	to be unjust	ᶜija:latan
21	4131	q w d	jaqu:d	to lead	qija:datan
22	4137	q w f	jaqu:f	to follow	qija:fatan
23	4483	k j s	jaki:s	to be wise	kija:satan
24	4675	l j q	jali:q	to be fit for	lija:qatan
25	5266	n w b	janu:b	to take place of	nija:batan

Table 5.22: Medially-weak VNs of the pattern $C_1aC_2a{:}C_3{+}an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	804	b w ʔ	jabu:ʔ	to deserve	bawa:ʔan
2	817	b w r	jabu:r	to leave uncultivated	bawa:ran
3	850	b j t	jabi:t	to become	baja:tan
4	879	b j n	jabi:n	to appear	baja:nan
5	1079	θ w b	jaθu:b	to come back to one's senses	θawa:ban
6	1269	dʒ w z	jadʒu:z	to be accepted	dʒawa:zan
7	1534	h̲ j j	jah̲ja:	to be alive	h̲aja:tan
8	1896	d w m	jadu:m	to persist	dawa:man
9	1986	ð w q	jaðu:q	to experience	ðawa:qan
10	2219	r w dʒ	jaru:dʒ	to be current	rawa:dʒan
11	2220	r w h̲	jaru:h̲	to leave to feel comfortable	rawa:h̲an
12	2230	r w ɣ	jaru:ɣ	to elude	rawa:ɣan
13	2673	s w ɣ	jasu:ɣ	to be permitted	sawa:ɣan
14	2682	s w m	jasu:m	to wander	sawa:man
15	3259	t̲ w f	jat̲u:f	to go around	t̲awa:fan
16	3872	f w t	jafu:t	to pass	fawa:tan
17	3890	f w q	jafu:q	to surpass	fawa:qan
18	4645	l w ð	jalu:ð	to escape	lawa:ðan
19	4675	l j q	jali:q	to be fit for	laja:qan
20	4683	l j n	jail:n	to be flexible	laja:nan
21	5284	n w l	janu:l	to get	nawa:lan
22	5488	h w n	jahu:n	to be weak	hawa:nan

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Table 5.23: Medially-weak VNs of the pattern $C_1aC_2C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	335	ʔ w b	jaʔu:b	to come back	ʔawbatan
2	1006	t w b	jatu:b	to repent	tawbatan
3	1080	θ w r	jaθu:r	to rebel	θawratan
4	1264	dʒ w d	jadʒu:d	to perfect	dʒawdatan
5	1275	dʒ w l	jadʒu:l	to roam	dʒawlatan
6	1282	dʒ j ʔ	jadʒi:ʔ	to occur	dʒajʔatan
7	1507	h̲ w t̲	jah̲u:t̲	to guard	h̲ajt̲atan
8	1519	h̲ j r	jah̲a:r	to be confused	h̲ajratan
9	1710	x j b	jaxi:b	to fail	xajbatan
10	1711	x j r	jaxi:r	to pick	xajratan
11	1892	d w l	jadu:l	to be changed	dawlatan
12	2669	s w r	jasu:r	to get angry	sawratan
13	2934	ʃ j b	jaʃi:b	to have grey hair	ʃajbatan
14	3490	ᶜ w d	jaᶜu:d	to return	ᶜawdatan
15	3512	ᶜ j l	jaᶜi:l	to become poor	ᶜajlatan
16	3636	ɣ j r	jaɣa:r	to be jealous	ɣajratan
17	4977	m j z	jami:z	to distinguish	majzatan
18	5266	n w b	janu:b	to be affected by	nawbatan
19	5492	h j ʔ	jaha:ʔ	to look good	hajʔatan
20	5494	h j b	jaha:b jahi:b	to fear	hajbatan

Table 5.24: Medially-weak VNs of the pattern $C_1aC_2aC_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1031	t j h	jati:h	to get lost	tajahan
2	1519	h̲ j r	jah̲a:r	to be confused	h̲ajaran
3	1703	x w r	jaxu:r	to become weaker	xawaran
4	1704	x w s̲	jaxu:s̲	to have sunken eye(s)	xawas̲an
5	2225	r w ʃ	jaru:ʃ	to become insane	rawaʃan
6	3158	d̲ j ᶜ	jad̲i:ᶜ	to be lost	d̲ajaᶜan
7	3489	ᶜ w dʒ	jaᶜwadʒ	to contort	ᶜawadʒan
8	3492	ᶜ w r	jaᶜwar	to become one-eyed	ᶜawaran
9	3496	ᶜ w d̲	jaᶜu:d̲	to compensate	ᶜawadan
10	3498	ᶜ w l	jaᶜu:l	to be unjust	ᶜawalan
11	3900	f w h	jafu:h	to have a wide mouth	fawahan
12	3493	ᶜ w z	jaᶜu:z	to become poor	ᶜawazan
13	3495	ᶜ w s̲	jaᶜu:s̲	to be difficult	ᶜawas̲an
14	4454	k w ᶜ	jaku:ᶜ	to roll	kawaᶜan
15	4641	l w θ	jalu:θ	to be stupid	lawaθan
16	5479	h w dʒ	jahwadʒ	to be flighty	hawadʒan
17	5483	h w s	jahwas	to be obsessed with	hawasan
18	5492	h j ʔ	jahu:ʔ	to look good	hajaʔan
19	5512	h j f	jahi:f	to be slim	hajafan

Table 5.25: Medially-weak VNs of the pattern $C_1uC_2u{:}C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	855	b j d	jabi:d	to diminish	buju:dan
2	1529	h̲ j l	jah̲i:l	to change	h̲uju:lan
3	1993	ð j ᶜ	jaði:ᶜ	to be widespread	ðuju:ᶜan
4	2390	z j h̲	jazi:h̲	to disappear	zuju:h̲an
5	2692	s j h̲	jasi:h̲	to cruise	suju:h̲an

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6	2943	ʃ j ᶜ	jaʃi:ᶜ	to spread	ʃuju:ᶜan
7	3505	ᶜ j θ	jaᶜi:θ	to ravage	ᶜuju:θan
8	3916	f j d	jafi:d	to be filled with	fuju:dan
9	5290	n j ʔ	jani:ʔ	to be raw	nuju:ʔan
10	1079	θ w b	jaθu:b	to come back to one's senses	θuʔu:ban
11	2216	r w b	jaru:b	to be uncertain	ruʔu:ban
12	2666	s w x	jasu:x	to sink	suʔu:xan
13	3625	ɣ w r	jaɣu:r	to fall in	ɣuʔu:ran
14	4968	m w h	jamu:h	to be rich in water	muʔu:han

Table 5.26: Medially-weak VNs of the pattern $C_1iC_2C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1282	dʒ j ʔ	jadʒi:ʔ	to come	dʒi:ʔatan
2	1507	ḥ w ṭ	jaḥu:ṭ	to guard	ḥi:ṭatan
3	1706	x w f	jaxa:f	to fear	xi:fatan
4	1711	x j r	jaxi:r	to pick	xi:ratan
5	2243	r j b	jari:b	to make skeptical	ri:batan
6	2695	s j r	jasi:r	to walk	si:ratan
7	3263	ṭ j b	jaṭi:b	to be good	ṭi:batan
8	3508	ᶜ j ʃ	jaᶜi:ʃ	to live	ᶜi:ʃatan
9	3633	ɣ j b	jaɣi:b	to speak ill of somebody	ɣi:batan
10	4977	m j z	jami:z	to distinguish	mi:zatan

Table 5.27: Medially-weak VNs of the pattern $C_1ajC_2C_3u:C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	361	ʔ w l	jaʔu:l	to be handed over to	ʔajlu:latan
2	855	b j d	jabi:d	to diminish	bajdu:datan
3	879	b j n	jabi:n	to leave	bajnu:natan
4	1511	ḥ w l	jaḥu:l	to stop	ḥajlu:latan
5	1530	ḥ j n	jaḥi:n	to approach	ḥajnu:natan
6	1896	d w m	jadu:m	to persist	dajmu:matan
7	2937	ʃ j x	jaʃi:x	to become old	ʃajxu:xatan
8	3092	ṣ j r	jaṣi:r	to become	ṣajru:ratan
9	3633	ɣ j b	jaɣi:b	to fall into a coma	ɣajbu:batan
10	4473	k w n	jaku:n	to exist	kajnu:natan

Table 5.28: Medially-weak VNs of the pattern $C_1iC_2C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1031	t j h	jati:h	to get lost	ti:han
2	1922	d j n	jadi:n	to believe in	di:nan
3	3160	ḍ j q	jaḍi:q	to be narrow	ḍi:qan
4	3263	ṭ j b	jaṭi:b	to be good	ṭi:ban
5	4141	q w l	jaqu:l	to speak	qi:lan
6	4683	l j n	jail:n	to be flexible	li:nan

Table 5.29: Medially-weak VNs of the pattern $C_1uC_2u:C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2707	s j l	jasi:l	to stream	suju:latan
2	3916	f j d	jafi:d	to be filled with	fuju:datan
3	4980	m j ᶜ	jami:ᶜ	to become fluid	muju:ᶜatan
4	5290	n j ʔ	jani:ʔ	to be raw	nuju:ʔatan
5	4683	l j n	jali:n	to be flexible	luju:natan

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Table 5.30 : Medially-weak VNs of the pattern $C_1aC_2iC_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2220	r w ḥ	jara:ḥ	to feel comfortable	ra:ḥatan
2	3258	ṭ w ˁ	jaṭu:ˁ	to obey	ṭa:ˁatan
3	3260	ṭ w q	jaṭu:q	to bear	ṭa:qatan
4	4141	q w l	jaqu:l	to speak	qa:latan
5	4145	q w m	jaqu:m	to stand up	qa:matan

Table 5.31: Medially-weak VNs of the pattern $C_1uC_2a:C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	3074	s̲ w t	jas̲u:t	to yell	s̲uwa:tan
2	3890	f w q	jafu:q	to hiccup	fuwa:qan
3	5269	n w ḥ	janu:ḥ	to moan	nuwa:ḥan
4	4645	l w ð	jalu:ð	to escape	luwa:ðan
5	5517	h j m	jahi:m	to be thirsty	huja:man

Table 5.32: Medially-weak VNs of the pattern $ma+C_1C_2aC_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2943	ʃ j ˁ	jaʃi:ˁ	to spread	maʃa:ˁan
2	2947	ʃ j l	jaʃi:l	to pick up	maʃa:lan
3	5285	n w m	jana:m	to sleep	mana:man

Table 5.33: Medially-weak VNs of the pattern CuC_2C_3+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1264	dʒ w d	jadʒu:d	to lavish to exist in large numbers or amounts	dʒu:dan
2	1703	x w r	jaxu:r	to bellow	xu:ran
3	1898	d w n	jadu:n	to be despicable	du:nan

Table 5.34: Medially-weak VNs of the pattern $ma+C_1C_2aC_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5488	h w n	jahu:n	to be weak	maha:natan
2	5494	h j b	jaha:b jahi:b	to fear	maha:batan

Table 5.35: Medially-weak VNs of the pattern $ti+C_1C_2a:C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	879	b j n	jabi:n	to appear	tibja:nan
2	3259	ṭ w f	jaṭu:f	to go around	tiṭwa:fan

Table 5.36: Medially-weak VNs of the pattern $ta+C_1C_2a:C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2695	s j r	jasi:r	to walk	tasja:ran
2	5517	h j m	jahi:m	to be thirsty	tahja:man

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Table 5.37: Medially-weak VNs of the pattern $C_1iC_2aC_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	3489	ᶜ w dʒ	jaᶜwadʒ	to contort	ᶜiwadʒan

Table 5.38: Medially-weak VNs of the pattern $C_1uC_2C_3at$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1264	dʒ w d	jadʒu:d	to perfect	dʒu:datan

Table 5.39: Medially-weak VNs of the pattern $C_1iC_2u{:}C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2390	z j h̲	jazi:h̲	to displace	ziju:h̲an

Table 5.40: Medially-weak VNs of the pattern $C_1uC_2C_3a{:}$ʔ+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1716	x j l	jaxa:l	to be arrogant	xujla:ʔan

Table 5.41: Medially-weak VNs of the pattern $C_1aC_2a{:}C_3$ijat+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	3258	t̲ w ᶜ	jat̲u:ᶜ	to comply with	t̲awa:ᶜijatan

Table 5.42: Medially-weak VNs of the pattern ma+$C_1C_2iC_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	3092	s̲ j r	jas̲i:r	to become	mas̲i:ran

Appendix (C): Finally-weak VNs

Table 5.43: Finally-weak VNs of the pattern $C_1aC_2C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	56	ʔ t j	jaʔti:	to come	ʔatjan
2	178	ʔ s w	jaʔsu:	to comfort	ʔaswan
3	179	ʔ s j	jaʔsi:	to heal	ʔasjan
4	253	ʔ l w	jaʔlu:	to weaken	ʔalwan
5	324	ʔ n j	jaʔni:	to slow down	ʔanjan
6	605	b r j	jabri:	to sharpen	barjan
7	689	b ɣ j	jabɣi:	to be unjust	baɣjan
8	751	b l w	jablu:	to test	balwan
9	1078	θ n j	jaθni:	to bend	θanjan
10	1110	dʒ b w	jadʒbu:	to collect	dʒabwan
11	1111	dʒ b j	jadʒbi:	to collect	dʒabjan
12	1114	dʒ θ w	jadʒθu:	to bow	dʒaθwan
13	1164	dʒ r j	jadʒri:	to run	dʒarjan
14	1214	dʒ l w	jadʒlu:	to rinse	dʒalwan
15	1245	dʒ n j	jadʒni:	to gather	dʒanjan
16	1328	h̲ θ w	jah̲θu:	to throw	h̲aθwan
17	1329	h̲ θ j	jah̲θi:	to throw	h̲aθjan
18	1337	h̲ dʒ w	jah̲dʒu:	to be wise	h̲adʒwan

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19	1347	h d w	jahdu:	to sing for camels to follow	hadwan
20	1355	h ð w	jahðu:	to imitate	haðwan
21	1397	h s w	jahsu:	to sip	haswan
22	1404	h ʃ w	jahʃu:	to stuff	haʃwan
23	1434	h f w	jahfu:	to give generously	hafwan
24	1460	h l j	jahli:	to be sweet	haljan
25	1477	h m j	jahmi:	to protect	hamjan
26	1494	h n j	jahni:	to bend	hanjan
27	1553	x b w	jaxbu:	to be extinguished	xabwan
28	1610	x z j	jaxza:	to be humiliated	xizjan
29	1624	x ʃ j	jaxʃa:	to fear	xaʃjan
30	1632	x s j	jaxsa:	to be castrated	xasjan
31	1650	x t w	jaxtu:	to walk	xatwan
32	1658	x f j	jaxfi:	to hide	xafjan
33	1696	x n w	jaxnu:	to use impolite language	xanwan
34	1747	d dʒ w	jaddʒu:	to become dark	dadʒwan
35	1753	d h w	jadhu:	to flatten	dahwan
36	1754	d h j	jadhi:	to flatten	dahjan
37	1840	d l w	jadlu:	to express one's opinions	dalwan
38	1856	d m j	jadmi:	to bleed	damjan
39	1876	d h w	jadhu:	to be experienced by	dahwan
40	1878	d h j	jadha:	to be experienced by	dahjan
41	1958	ð r w	jaðru:	to disperse	ðarwan
42	1959	ð r j	jaðri:	to disperse	ðarjan
43	2032	r b w	jarbu:	to increase	rabwan
44	2045	r θ w	jarθu:	to commemorate	raθwan
45	2046	r θ j	jarθi:	to commemorate	raθjan
46	2066	r h w	jarhu:	to cause to revolve	rahwan
47	2067	r h j	jarhi:	to grind	rahjan
48	2104	r s w	jarsu:	to moor	raswan
49	2112	r ʃ w	jarʃu:	to bribe	raʃwan
50	2140	r ˤ j	jarˤa:	to herd sheep	raˤjan
51	2146	r ɣ w	jarɣu:	to froth to grunt	raɣwan
52	2160	r f w	jarfu:	to get married	rafwan
53	2171	r q j	jarqi:	to recite Quran over someone for healing and protection	raqjan
54	2171	r q j	jarqa:	to advance	raqjan
55	2196	r m j	jarmi:	to throw	ramjan
56	2206	r n w	jarnu:	to look forward to	ranwan
57	2274	z dʒ w	jazdʒu:	to push gently	zadʒwan
58	2297	z r j	jazri:	to mock	zarjan
59	2369	z h w	jazhu:	to be arrogant	zahwan
60	2434	s b j	jasbi:	to imprison	sabjan
61	2454	s dʒ w	jasdʒu:	to be calm to cover	sadʒwan
62	2466	s h w	jashu:	to dredge	sahwan
63	2466	s h j	jasha:	to dredge	sahjan
64	2509	s r w	jasru:	to remove	sarwan
65	2511	s r j	jasri:	to walk	sarjan
66	2520	s t w	jastu:	to assail	satwan
67	2527	s ˤ j	jasˤa:	to strive	saˤjan
68	2527	s ˤ j	jasˤa:	to betray	saˤjan
69	2545	s f j	jasfa:	to disperse	safjan
70	2554	s q j	jasqi:	to give someone a drink	saqjan
71	2590	s l w	jaslu:	to forget	salwan

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72	2658	s h w	jashu:	to forget	sahwan
73	2760	ʃ t w	jaʃtu:	to rain	ʃatwan
74	2766	ʃ dʒ w	jaʃdʒu:	to become sad	ʃadʒwan
75	2788	ʃ d w	jaʃdu:	to sing	ʃadwan
76	2792	ʃ ð w	jaʃðu:	to smell good	ʃaðwan
77	2866	ʃ q w	jaʃqu:	to be distressed	ʃaqwan
78	2873	ʃ k w	jaʃku:	to complain	ʃakwan
79	2875	ʃ k j	jaʃki:	to complain	ʃakjan
80	2969	s̲ b w	jas̲bu:	to long for	s̲abwan
81	2977	s̲ h w	jas̲hu:	to wake up	s̲ahwan
82	3039	s̲ l j	jas̲li:	to be tortured	s̲aljan
83	3113	d̲ h̲ w	jad̲h̲a:	to be in the forenoon	d̲ah̲wan
84	3136	d̲ f w	jad̲fu:	to increase	d̲afwan
85	3184	t̲ h̲ w	jat̲hu:	to flatten	t̲ah̲wan
86	3208	t̲ ɣ j	jat̲ɣa:	to be despotic	t̲aɣjan
87	3217	t̲ f w	jat̲fu:	to float	t̲afwan
88	3030	t̲ l j	jat̲li:	to paint	t̲aljan
89	3040	t̲ m j	jat̲mi:	to silt	t̲amjan
90	3248	t̲ h̲ w	jat̲wu:	to cook	t̲ah̲wan
91	3249	t̲ h̲ j	jat̲ha:	to cook	t̲ahjan
92	3330	ᶜ d w	jaᶜdu:	to be unjust to run	ᶜadwan
93	3355	ᶜ r w	jaᶜru:	to befall	ᶜarwan
94	3367	ᶜ z w	jaᶜzu:	to be ascribed to	ᶜazwan
95	3368	ᶜ z j	jaᶜzi:	to be ascribed to	ᶜazjan
96	3384	ᶜ ʃ w	jaᶜʃu:	to be night-blind	ᶜaʃwan
97	3395	ᶜ s̲ j	jaᶜs̲a:	to disobey	ᶜas̲jan
98	3451	ᶜ l j	jaᶜla:	to rise	ᶜaljan
99	3484	ᶜ n j	jaᶜna:	to pay attention to	ᶜanjan
100	3530	ɣ θ w	jaɣθu:	to feel sick	ɣaθwan
101	3531	ɣ θ j	jaɣθi:	to feel sick	ɣaθjan
102	3531	ɣ θ j	jaɣθa: jaɣθi:	to talk a lot	ɣaθjan
103	3538	ɣ d w	jaɣdu:	to become	ɣadwan
104	3559	ɣ r w	jaɣru:	to glue	ɣarwan
105	3565	ɣ z w	jaɣzu:	to invade	ɣazwan
106	3590	ɣ f w	jaɣfu:	to sleep	ɣafwan
107	3604	ɣ l j	jaɣli:	to boil	ɣaljan
108	6324	ɣ θ w	jaɣu:θ	to help	ɣawθan
109	3761	f r j	jafri:	to lie	farjan
110	3779	f s w	jafsu:	to fart	faswan
111	3787	f ʃ w	jafʃu:	to spread	faʃwan
112	3845	f l w	jaflu:	to delouse	falwan
113	3848	f l j	jafli:	to delouse	faljan
114	3945	q b w	jaqbu:	to bend	qabwan
115	3970	q ð j	jaqði:	to have motes in the eye	qaðjan
116	4007	q r w	jaqru:	to follow	qarwan
117	4008	q r j	jaqri:	to host	qarjan
118	4021	q s w	jaqsu:	to be harsh	qaswan
119	4042	q s̲ w	jaqs̲u:	to become distant	qas̲wan
120	4046	q d̲ j	jaqd̲i:	to judge	qad̲jan
121	4058	q t̲ w	jaqt̲u:	to miaow	qat̲wan
122	4073	q f w	jaqfu:	to follow	qafwan
123	4089	q l j	jaqli:	to fry	qaljan
124	4121	q n w	jaqnu:	to become red	qanwan
125	4224	k b w	jakbu:	to fall	kabwan
126	4342	k s w	jaksu:	to sheathe	kaswan
127	4544	l h̲ w	jalh̲u:	to peel	lah̲wan

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128	4585	l ɣ w	jalɣu:	to smatter	laɣwan
129	4603	l q j	jalqa:	to encounter	laqjan
130	4634	l h w	jalhu:	to be amused	lahwan
131	4754	m h̲ w	jamh̲u:	to remove	mah̲wan
132	4756	m h̲ j	jamh̲i:	to erase	mah̲jan
133	4769	m d j	jamdi:	to stab	madjan
134	4808	m r j	jamri:	to be ungrateful	marjan
135	4838	m ʃ j	jamʃi:	to walk	maʃjan
136	4888	m k w	jamku:	to whistle	makwan
137	4927	m n w	jamnu:	to test	manwan
138	4928	m n j	jamna:	to test	manjan
139	4999	n ʔ j	janʔa:	to be distant	naʔjan
140	5026	n b w	janbu:	to turn away from	nabwan
141	5055	n dʒ w	jandʒu:	to make a secret conversation	nadʒwan
142	5066	n h̲ w	janh̲u:	to head for	nah̲wan
143	5103	n z w	janzu:	to need	nazwan
144	5117	n s j	jansa:	to forget	nasjan
145	5133	n ʃ w	janʃa:	to get drunk	naʃwan
146	5142	n s̲ w	jans̲u:	to catch from the forelock	nas̲wan
147	5150	n d̲ w	jand̲u:	to undress	nad̲wan
148	5172	n ᶜ j	jnaᶜa:	to announce the death of someone	naᶜjan
149	5183	n ɣ j	janɣi:	to babble	naɣjan
150	5200	n f j	janfi:	to deny	nafjan
151	5264	n h j	janha:	to prevent	nahjan
152	5350	h b w	jahbu:	to rise	habwan
153	5366	h dʒ w	jahdʒu:	to satirize	hadʒwan
154	5379	h d j	jahdi:	to guide	hadjan
155	5383	h ð j	jahði:	to ramble	haðjan
156	5399	h r w	jahru:	to hit with a baton	harwan
157	5402	h r j	jahri:	to wear out clothes	harjan
158	5429	h f w	jahfu:	to be mistaken	hafwan
159	5464	h m j	jahmi:	to wander	hamjan

Table 5.44: Finally-weak VNs of the pattern $C_1aC_2a{:}C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	522	b d w	jabdu:	to appear	bada:ʔan
2	703	b q j	jabqa:	to stay	baqa:ʔan
3	751	b l w	jablu:	to test	bala:ʔan
4	751	b l j	jabla:	to wear off	bala:ʔan
5	803	b h w	jabhu:	to look beautiful	baha:ʔan
6	1172	dʒ z j	jadʒzi:	to recompense	dʒaza:ʔan
7	1214	dʒ l w	jadʒlu:	to uncover	dʒala:ʔan
8	2274	z dʒ w	jazdʒu:	to push gently	zadʒa:ʔan
9	1434	h̲ f w	jah̲fa:	to walk barefoot	h̲afa:ʔan
10	1658	x f j	jaxfa:	to be hidden	xafa:ʔan
11	1673	x l w	jaxlu:	to be empty	xala:ʔan
12	1878	d h j	jadha:	to be insightful	daha:ʔan
13	2325	z k w	jazku:	to increase	zaka:ʔan
14	2326	z k j	jazka:	to increase	zaka:ʔan
15	2474	s x w	jasxu:	to become generous	saxa:ʔan
16	2618	s m w	jasmu:	to rise up	sama:ʔan
17	2652	s n w	jasnu:	to lighten	sana:ʔan
18	2652	s n j	jasna:	to lighten	sana:ʔan
19	2969	s̲ b w	jas̲bu:	to long for	s̲aba:ʔan
20	2970	s̲ b j	jas̲ba:	to act boyishly	s̲aba:ʔan
21	3126	d̲ r j	jad̲ra:	to fight hard	d̲ara:ʔan
22	3330	ᶜ d w	jaᶜdu:	to be unjust	ᶜada:ʔan

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23	3368	ᶜ z j	jaᶜza:	to pay condolences	ᶜaza:ʔan
24	3484	ᶜ n j	jaᶜna:	to be exhausted	ᶜana:ʔan
25	1050	θ r w	jaθru:	to be rich	θara:ʔan
26	1969	ð k w	jaðku:	to spread a strong odor to intensify to be brilliant to immolate	ðaka:ʔan
27	2059	r dʒ w	jardʒu:	to hope	radʒa:ʔan
28	2073	r x w	jarxu:	to prosper	raxa:ʔan
29	3527	ɣ b j	jaɣba:	to be stupid	ɣaba:ʔan
30	3559	ɣ r w	jaɣra:	to love	ɣara:ʔan
31	3603	ɣ l w	jaɣlu:	to become expensive	ɣala:ʔan
32	3797	f d̲ w	jafd̲u:	to be empty	fad̲a:ʔan
33	3845	f l w	jaflu:	to delouse	fala:ʔan
34	3863	f n j	jafna:	to perish	fana:ʔan
35	4008	q r j	jaqri:	to host	qara:ʔan
36	4042	q s̲ w	jaqs̲a:	to become distant	qas̲a:ʔan
37	4046	q d̲ j	jaqd̲i:	to judge	qad̲a:ʔan
38	4089	q l j	jaqla:	to hate	qala:ʔan
39	4848	m d̲ j	jamd̲i:	to sign	mad̲a:ʔan
40	5055	n dʒ w	jandʒu:	to survive	nadʒa:ʔan
41	5220	n q w	janqa:	to be pure	naqa:ʔan
42	5248	n m w	janmu:	to grow	nama:ʔan
43	5250	n m j	janmi:	to increase	nama:ʔan

Table 5.45: Finally-weak VNs of the pattern $C_1aC_2aC_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	98	ʔ ð j	jaʔða:	to be harmed	ʔaðan
2	178	ʔ s w	jaʔsu:	to comfort	ʔasan
3	179	ʔ s j	jaʔsa:	to feel sorry	ʔasan
4	1052	θ r j	jaθra:	to be fertile	θaran
5	1245	dʒ n j	jadʒni:	to gather	dʒanan
6	1337	h̲ dʒ w	jah̲dʒa:	to be wise	h̲adʒan
7	1378	h̲ r w	jah̲ru:	to be advisable for	h̲aran
8	1434	h̲ f w	jah̲fa:	to walk barefoot	h̲afan
9	1573	x ð j	jaxða:	to be weakened	xaðan
10	1610	x z j	jaxza:	to be humiliated	xazan
11	1696	x n w	jaxnu:	to use impolite language	xanan
12	1697	x n j	jaxni:	to use impolite language	xanan
13	1856	d m j	jadmi:	to bleed	daman
14	1969	ð k w	jaðku:	to intensify	ðakan
15	2326	z k j	jazka:	to increase	zakan
16	2475	s x j	jasxa:	to become generous	saxan
17	2652	s n w	jasna:	to lighten	sanan
18	2766	ʃ dʒ w	jaʃdʒa:	to become sad	ʃadʒan
19	2813	ʃ r j	jaʃra:	to increase	ʃaran
20	2827	ʃ ð̲ j	jaʃð̲a:	to scatter	ʃað̲an
21	2969	s̲ b w	jas̲bu:	to long for	s̲aban
22	2970	s̲ b j	jas̲ba:	to act boyishly	s̲aban
23	2991	s̲ d j	jas̲di:	to get thirsty	s̲adan
24	3011	s̲ ɣ j	jas̲ɣa:	to decline from	s̲aɣan
25	3113	d̲ h̲ w	jad̲h̲a:	to be in the forenoon	d̲ah̲an
26	3126	d̲ r j	jad̲ra:	to fight hard	d̲aran
27	3385	ᶜ ʃ j	jaᶜʃa:	to be night-blind	ᶜaʃan
28	3462	ᶜ m j	jaᶜma:	to be blind	ᶜaman
29	3484	ᶜ n j	jaᶜna:	to be exhausted	ᶜanan
30	3559	ɣ r w	jaɣra:	to love	ɣaran

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31	3571	ɣ ʃ j	jaɣʃa:	to darken to sleep	ɣaʃan
32	3714	f d j	jafdi:	to sacrifice	fadan
33	3970	q ð j	jaqði:	to have motes in the eye	qaðan
34	4042	q s̲ w	jaqsa:	to become distant	qas̲an
35	4320	k r j	jakra:	to sleep	karan
36	4570	l ð̲ j	jalð̲a:	to blaze	lað̲an
37	4585	l ɣ w	jalɣa:	to smatter	laɣan
38	4624	l m j	jalma:	to be dark-skinned	laman
39	4634	l h w	jalha:	to divert from	lahan
40	5086	n d j	janda:	to be wet	nadan

Table 5.46: Finally-weak VNs of the pattern $C_1uC_2u{:}C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	522	b d w	jabdu:	to appear	buduwwan
2	985	t l w	jatlu:	to follow	tuluwwan
3	1114	dʒ θ w	jadʒθu:	to bow	dʒuθuwwan
4	1476	h̲ m w	jah̲mu:	to be hot	h̲umuwwan
5	1493	h̲ n w	jah̲nu:	to feel compassion for	h̲unuwwan
6	1553	x b w	jaxbu:	to be extinguished	xubuwwan
7	1673	x l w	jaxlu:	to be empty to be devoted to	xuluwwan
8	1863	d n w	jadnu:	to get closer	dunuwwan
9	1969	ð k w	jaðku:	to intensify	ðukuwwan
10	2032	r b w	jarbu:	to increase	rubuwwan
11	2059	r dʒ w	jardʒu:	to hope	rudʒuwwan
12	2206	r n w	jarnu:	to look forward to	runuwwan
13	2274	z dʒ w	jazdʒu:	to push gently	zudʒuwwan
14	2325	z k w	jazku:	to increase	zukuwwan
15	2369	z h w	jazhu:	to be arrogant	zuhuwwan
16	2454	s dʒ w	jasdʒu:	to be calm	sudʒuwwan
17	2590	s l w	jaslu:	to forget	suluwwan
18	2618	s m w	jasmu:	to rise up	sumuwwan
19	2969	s̲ b w	jas̲bu:	to long for	s̲ubuwwan
20	3020	s̲ f w	jas̲fu:	to be pure	s̲ufuwwan
21	3113	d̲ h̲ w	jad̲h̲a:	to be in the forenoon	d̲uh̲uwwan
22	3217	t̲ f w	jat̲fu:	to float	t̲ufuwwan
23	3248	t̲ h w	jat̲wu:	to cook	t̲uhuwwan
24	3308	ᶜ t w	jaᶜtu:	to be arrogant	ᶜutuwwan
25	3311	ᶜ θ w	jaᶜθu:	to cause mischief	ᶜuθuwwan
26	3482	ᶜ n w	jaᶜnu:	to submit to	ᶜunuwwan
27	3330	ᶜ d w	jaᶜdu:	to be unjust	ᶜuduwwan
28	3530	ɣ θ w	jaɣθu:	to feel sick	ɣuθuwwan
29	3538	ɣ d w	jaɣdu:	to leave at lunch time to become	ɣuduwwan
30	3590	ɣ f w	jaɣfu:	to sleep	ɣufuwwan
31	3603	ɣ l w	jaɣlu:	to be excessive	ɣuluwwan
32	3689	f t w	jaftu:	to give a religious advice	futuwwan
33	3787	f ʃ w	jafʃu:	to spread	fuʃuwwan
34	4042	q s̲ w	jaqs̲u:	to become distant	qus̲uwwan
35	4121	q n w	jaqnu:	to become red	qunuwwan
36	4224	k b w	jakbu:	to fall	kubuwwan
37	5103	n z w	janzu:	to need	nuzuwwan
38	5248	n m w	janmu:	to grow	numuwwan
39	5350	h b w	jahbu:	to rise	hubuwwan

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Table 5.47: Finally-weak VNs of the pattern $C_1iC_2a{:}C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	45	ʔ b j	jaʔba:	to refuse	ʔiba:ʔan
2	689	b ɣ j	jabɣi:	to commit adultery	biɣa:ʔan
3	789	b n j	jabni:	to build	bina:ʔan
4	1214	dʒ l w	jadʒlu:	to rinse	dʒila:ʔan
5	1347	h̲ d w	jah̲du:	to sing for camels	h̲ida:ʔan
6	1355	h̲ ð w	jah̲ðu:	to imitate	h̲iða:ʔan
7	1632	x s̲ j	jaxs̲a:	to be castrated	xis̲a:ʔan
8	2124	r d̲ w	jard̲a:	to be satisfied	rid̲a:ʔan
9	2045	r θ w	jarθu:	to commemorate	riθa:ʔan
10	2046	r θ j	jarθi:	to commemorate	riθa:ʔan
11	2365	z n j	jazni:	to fornicate	zina:ʔan
12	2434	s b j	jasbi:	to imprison	siba:ʔan
13	2813	ʃ r j	jaʃri:	to buy	ʃira:ʔan
14	2858	ʃ f j	jaʃfa:	to heal	ʃifa:ʔan
15	3126	d̲ r j	jad̲ra:	to fight hard	d̲ira:ʔan
16	3030	t̲ l j	jat̲li:	to paint	t̲ila:ʔan
17	3540	ɣ ð w	jaɣðu:	to feed	ɣiða:ʔan
18	3622	ɣ n j	jaɣna:	to become rich	ɣina:ʔan
19	3714	f d j	jafdi:	to sacrifice	fida:ʔan
20	4603	l q j	jalqa:	to encounter	liqa:ʔan
21	5366	h dʒ w	jahdʒu:	to satirize	hidʒa:ʔan

Table 5.48: Finally-weak VNs of the pattern $C_1iC_2a{:}C_3$at+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	45	ʔ b j	jaʔba:	to refuse	ʔiba:ʔatan
2	789	b n j	jabni:	to build	bina:jatan
3	985	t l w	jatlu:	to recite	tila:watan
4	1110	dʒ b w	jadʒbu:	to collect	dʒiba:watan
5	1111	dʒ b j	jadʒbi:	to collect	dʒiba:jatan
6	1245	dʒ n j	jadʒni:	to commit a crime	dʒina:jatan
7	1446	h̲ k j	jah̲ki:	to talk	h̲ika:jatan
8	1477	h̲ m j	jah̲mi:	to protect	h̲ima:jatan
9	1494	h̲ n j	jah̲ni:	to bend	h̲ina:jatan
10	2140	r ᶜ j	jarᶜa:	to care for	riᶜa:jatan
11	2196	r m j	jarmi:	to throw	rima:jatan
12	2297	z r j	jazri:	to mock	zira:jatan
13	2511	s r j	jasri:	to walk	sira:jatan
14	2527	s ᶜ j	jasᶜa:	to betray	siᶜa:jatan
15	3484	ᶜ n j	jaᶜna:	to pay attention to	ᶜina:jatan
16	4372	k f j	jakfi:	to have enough	kifa:jatan
17	4428	k n j	jakni:	to imply	kina:jatan
18	5235	n k j	janka:	to defeat	nika:jatan
19	5379	h d j	jahdi:	to guide	hida:jatan

Table 5.49: Finally-weak VNs of the pattern $C_1aC_2C_3$at+an

Number	Dictionary Entry	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1624	x ʃ j	jaxʃa:	to fear	xaʃjatan
2	1673	x l w	jaxlu:	to be devoted to	xalwatan
3	2520	s t̲ w	jast̲u:	to assail	sat̲watan
4	2658	s h w	jashu:	to forget	sahwatan
5	2873	ʃ k w	jaʃku:	to complain	ʃakwatan
6	2915	ʃ h w	jaʃhu:	to love	ʃahwatan

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7	2969	s̲ b w	jas̲bu:	to long for	s̲abwatan
8	3482	ᶜ n w	jaᶜnu:	to take by force	ᶜanwatan
9	3590	ɣ f w	jaɣfu:	to sleep	ɣafwatan
10	3591	ɣ f j	jaɣfa:	to sleep	ɣafjatan
11	4021	q s w	jaqsu:	to be harsh	qaswatan
12	4224	k b w	jakbu:	to fall	kabwatan
13	5026	n b w	janbu:	to be inconsistent with to turn away from	nabwatan
14	5055	n dʒ w	jandʒu:	to make a secret conversation	nadʒwatan
15	5076	n x w	janxu:	to be proud	naxwatan
16	5116	n s w	jansu:	to leave	naswatan
17	5133	n ʃ w n ʃ j	janʃa:	to get drunk	naʃwatan
18	5429	h f w	jahfu:	to be mistaken	hafwatan

Table 5.50: Finally-weak VNs of the pattern $C_1aC_2a{:}C_3at{+}an$

Number	Dictionary entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	803	b h w	jabhu:	to look beautiful	baha:ʔatan
2	1863	d n w	jadnu:	to get closer to become mean	dana:watan
3	1969	ð k w	jaðku:	to be brilliant	ðaka:watan
4	2073	r x w	jarxu:	to prosper	raxa:watan
5	1459	h̲ l w	jah̲lu:	to be sweet	h̲ala:watan
6	1459	h̲ l w	jah̲la:	to be sweet	h̲ala:watan
7	2474	s x w	jasxu:	to become generous	saxa:watan
8	2509	s r w	jasru:	to remove	sara:watan
9	2915	ʃ h w	jaʃhu:	to be delicious	ʃaha:watan
10	3126	d̲ r j	jad̲ra:	to fight hard	d̲ara:watan
11	3200	t̲ r w	jat̲ra:	to be soft	t̲ra:watan
12	3200	t̲ r w	jat̲ra:	to be soft	t̲ara:ʔatan
13	3385	ᶜ ʃ j	jaᶜʃa:	to be night-blind	ᶜaʃa:watan
14	3527	ɣ b j	jaɣba:	to be stupid	ɣaba:watan
15	4021	q s w	jaqsu:	to be harsh	qasa:watan
16	5086	n d j	janda:	to be wet	nada:watan
17	5220	n q w	janqa:	to be pure	naqa:watan
18	5220	n q w	janqa:	to be pure	naqa:ʔatan

Table 5.51: Finally-weak VNs of the pattern $C_1uC_2C_3{+}an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1747	d dʒ w	jaddʒu:	to become dark	dudʒwan
2	2104	r s w	jarsu:	to moor	ruswan
3	2171	r q j	jarqi:	to recite Quran over someone for healing and protection	ruqjan
4	2171	r q j	jarqa:	to advance	ruqjan
5	2590	s l j	jasla:	to cause to forget	suljan
6	2658	s h w	jashu:	to forget	suhwan
7	3011	s̲ ɣ j	jas̲ɣa:	to decline from	s̲uɣjan
8	3136	d̲ f w	jad̲fu:	to increase	d̲ufwan
9	3356	ᶜ r j	jaᶜra:	to get naked	ᶜurjan
10	4603	l q j	jalqa:	to encounter	luqjan

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Table 5.52: Finally-weak VNs of the pattern $C_1aC_2aC_3a{:}n+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2511	s r j	jasri:	to spread	saraja:nan
2	3312	ᶜ θ j	jaᶜθa:	to cause mischief	ᶜaθaja:nan
3	3531	ɣ θ j	jaɣθi:	to feel sick	ɣaθaja:nan
4	3531	ɣ θ j	jaɣθa:	to feel sick	ɣaθaja:nan
5	3604	ɣ l j	jaɣli:	to boil	ɣalaja:nan
6	5103	n z w	janzu:	to need	nazawa:nan
7	5383	h ð j	jahði:	to rave	haðaja:nan
8	5429	h f w	jahfu:	to be mistaken	hafawa:nan
9	5464	h m j	jahmi:	to wander	hamaja:nan

Table 5.53: Finally-weak VNs of the pattern $C_1uC_2i{:}C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2032	r b w	jarba:	to grow	rubijjan
2	3113	d̲ h̲ w	jad̲h̲a:	to be in the forenoon	d̲uh̲ijjan
3	3308	ᶜ t w	jaᶜtu:	to be very old	ᶜutijjan
4	3312	ᶜ θ j	jaᶜθa:	to cause mischief	ᶜuθijjan
5	3451	ᶜ l j	jaᶜla:	to rise	ᶜulijjan
6	3484	ᶜ n j	jaᶜna:	to pay attention to	ᶜunijjan
7	4603	l q j	jalqa:	to encounter	luqijjan
8	4634	l h w	jalhu:	to be distracted	luhijjan
9	4848	m d̲ j	jamd̲i:	to go away	mud̲ijjan

Table 5.54: Finally-weak VNs of the pattern $C_1iC_2aC_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	324	ʔ n j	jaʔni:	to slow down	ʔinan
2	751	b l j	jabla:	to wear off	bilan
3	2124	r d̲ w	jard̲a:	to be satisfied	rid̲an
4	2365	z n j	jazni:	to fornicate	zinan
5	2813	ʃ r j	jaʃri:	to buy	ʃiran
6	3622	ɣ n j	jaɣna:	to become rich	ɣinan
7	3714	f d j	jafdi:	to sacrifice	fidan
8	4008	q r j	jaqri:	to host	qiran
9	4089	q l j	jaqla:	to hate	qilan

Table 5.55: Finally-weak VNs of the pattern $C_1uC_2a{:}C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	713	b k j	jabki:	to cry	buka:ʔan
2	1057	θ ɣ w	jaθɣu:	to bleat	θuɣa:ʔan
3	1347	h̲ d w	jah̲du:	to sing for camels	h̲uda:ʔan
4	1803	d ᶜ w	jadᶜu:	to call	duᶜa:ʔan
5	2146	r ɣ w	jaɣu:	to grunt	ruɣa:ʔan
6	3779	f s w	jafsu:	to fart	fusa:ʔan
7	4888	m k w	jamku:	to whistle	muka:ʔan
8	5171	n ᶜ w	janᶜu:	to make a sound	nuᶜa:ʔan

Table 5.56: Finally-weak VNs of the pattern $C_1uC_2C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	689	b ɣ j	jabɣi:	to want	buɣjatan
2	1425	h̲ ð̲ w	jah̲ð̲a:	to have	h̲uð̲watan
3	1658	x f j	jaxfa:	to be hidden	xufjatan

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4	2969	s̲ b w	jas̲bu:	to long for	s̲ubwatan
5	3538	ɣ	jaɣdu:	to become	ɣudwatan
6	4428	k n j	jakna:	to call	kunjatan
7	4603	l q j	jalqa:	to encounter	luqjatan
8	5133	n ʃ w n ʃ j	janʃa:	to get drunk	nuʃwatan

Table 5.57: Finally-weak VNs of the pattern $C_1iC_2C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1425	h̲ ð̲ w	jah̲ð̲a:	to have	hiðwatan
2	1477	h̲ m j	jah̲mi:	put someone on a diet	h̲imjatan
3	1657	x f w	jaxfa:	to be hidden	xifwatan
4	1658	x f j	jaxfa:	to be hidden	xifjatan
5	1610	x z j	jaxza:	to be humiliated	xizjatan
6	3761	f r j	jafri:	to lie	firjatan
7	5133	n ʃ w	janʃa:	to get drunk	niʃwatan

Table 5.58: Finally-weak VNs of the pattern $C_1aC_2aC_3at+an$

Number	Dictionary entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	98	ʔ ð j	jaʔða:	to be harmed	ʔaða:tan
2	324	ʔ n j	jaʔni:	to slow down	ʔana:tan
3	1624	x ʃ j	jaxʃa:	to fear	xaʃa:tan
4	1969	ð k w	jaðku:	to immolate	ðaka:tan
5	2325	z k w	jazku:	to increase	zaka:tan
6	2873	ʃ k w	jaʃku:	to complain	ʃaka:tan
7	5055	n dʒ w	jandʒu:	to survive	nadʒa:tan

Table 5.59: Finally-weak VNs of the pattern $C_1uC_2C_3a:n+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	789	b n j	jabni:	to build	bunja:nan
2	1459	h̲ l w	jah̲la:	to be sweet	h̲ulwa:nan
3	2124	r d̲ w	jard̲a:	to be satisfied	rud̲wa:nan
4	2590	s l w	jaslu:	to forget	sulwa:nan
5	3208	t̲ ɣ j	jat̲ɣa:	to be despotic	t̲uɣja:nan
6	3330	ᶜ d w	jaᶜdu:	to be unjust	ᶜudwa:nan

Table 5.60: Finally-weak VNs of the pattern $C_1iC_2C_3a:n+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	56	ʔ t j	jaʔti:	to come	ʔitja:nan
2	2124	r d̲ w	jard̲a:	to be satisfied	rid̲wa:nan
3	3395	ᶜ s̲ j	jaᶜs̲a:	to disobey	ᶜis̲ja:nan
4	3571	ɣ ʃ j	jaɣʃa:	to come upon	ɣiʃja:nan
5	5117	n s j	jansa:	to forget	nisja:nan

Table 5.61: Finally-weak VNs of the pattern $C_1uC_2u:C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	43	ʔ b w	jaʔbu:	to become a father	ʔubuwwatan
2	83	ʔ x w	jaʔxu:	to have a brother	ʔuxuwwatan
3	3689	f t w	jaftu:	to be youthful	futuwwatan
4	5026	n b w	janbu:	to be inconsistent with	nubuwwatan

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Table 5.62: Finally-weak VNs of the pattern $C_1uC_2aC_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	713	b k j	jabki:	to cry	bukan
2	2511	s r j	jasri:	to walk	suran
3	4603	l q j	jalqa:	to encounter	luqan
4	5379	h d j	jahdi:	to guide	hudan

Table 5.63: Finally-weak VNs of the pattern $C_1aC_2i{:}C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1477	h̲ m j	jah̲mi:	to be hot	h̲amijjan
2	3571	ɣ ʃ j	jaɣʃa:	to darken	ɣaʃijjan
3	5172	n ᶜ j	jnaᶜa:	to announce the death of someone	naᶜijjan

Table 5.64: Finally-weak VNs of the pattern $C_1iC_2i{:}C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2590	s l w	jasla:	to forget	silijjan
2	3308	ᶜ t w	jaᶜtu:	to be excessive	ᶜitijjan

Table 5.65: Finally-weak VNs of the pattern $C_1aC_2i{:}C_3$at+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	98	ʔ ð j	jaʔða:	to be harmed	ʔaðijjatan

Appendix (D): Doubly-weak VNs

Table 5.66: Doubly-weak VNs of the pattern $C_1aC_2C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1990	ð w j	jaðwi:	to wither	ðawjan
2	1990	ð w j	jaðwi:	to wither	ðajjan
3	2241	r w j	jarwi:	to quench	rajjan
4	2385	z w j	jazwi:	to dismiss	zajjan
5	2932	ʃ w j	jaʃwi:	to barbeque	ʃajjan
6	3155	d̲ w j	jadwi:	to join	d̲ajjan
7	3262	t̲ w j	jat̲wi:	to fold	t̲ajjan
8	3632	ɣ w j	jaɣwi:	to deviate from what is right	ɣajjan
9	4477	k w j	jakwi:	to burn	kajjan
10	4664	l w j	jalwi:	to bend	lajjan
11	4664	l w j	jalwi:	to bend	lawjan
12	5564	w h̲ j	jah̲i:	to inspire	wah̲jan
13	5568	w x j	jaxi:	to intend	waxjan
14	5590	w r j	jari:	to inflame	warjan
15	5615	w ʃ j	jaʃi:	to adorn to inform against	waʃjan
16	5646	w ᶜ j	jaᶜi:	to be aware of	waᶜjan
17	5655	w f j	jafi:	to fulfill to increase	wafjan
18	5665	w q j	jaqi:	to protect	waqjan
19	5687	w l j	jali:	to be close	waljan
20	5692	w n j	jani:	to abandon	wanjan
21	5701	w h j	jahi:	to be weak	wahjan

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Table 5.67: Doubly-weak VNs of the pattern $C_1uC_2i:C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	372	ʔ w j	jaʔwi:	to accommodate	ʔuwijjan
2	1083	θ w j	jaθwi:	to settle	θuwijjan
3	1709	x w j	jaxwi:	to be empty	xuwijjan
4	1901	d w j	jadwi:	to make loud noise	duwijjan
5	1990	ð w j	jaðwi:	to wither	ðuwijjan
6	2385	z w j	jazwi:	to dismiss	zuwijjan
7	3155	d̲ w j	jadwi:	to join	d̲uwijjan
8	5490	h w j	jahwi:	to fall	huwijjan
9	5701	w h j	jahi:	to be weak	wuhijjan

Table 5.68: Doubly-weak VNs of the pattern $C_1iC_2a:C_3at$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2241	r w j	jarwi:	to narrate	riwa:jatan
2	3632	ɣ w j	jaɣwi:	to deviate from what is right	ɣiwa:jatan
3	3632	ɣ w j	jaɣwa:	to deviate from what is right	ɣiwa:jatan
4	5615	w ʃ j	jaʃi:	to inform against	wiʃa:jatan
5	5665	w q j	jaqi:	to protect	wiqa:jatan
6	5687	w l j	jali:	to rule	wila:jatan

Table 5.69: Doubly-weak VNs of the pattern $C_1aC_2aC_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1281	dʒ w j	jadʒwi:	to miss dreadfully	dʒawan
2	3155	d̲ w j	jad̲wa:	to be weak	d̲awan
3	3262	t̲ w j	jat̲wa:	to become thin	t̲awan
4	5289	n w j	janwi:	to depart	nawan
5	5490	h w j	jahwa:	to love	hawan

Table 5.70: Doubly-weak VNs of the pattern $C_1aC_2a:C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1083	θ w j	jaθwi:	to settle	θawa:ʔan
2	1534	h̲ j j	jah̲ja:	to be bashful	h̲aja:ʔan
3	1709	x w j	jaxwi:	to be empty	xawa:ʔan
4	3514	ᶜ j j	jaᶜja:	to be incapable of	ᶜaja:ʔan
5	5655	w f j	jafi:	to fulfill to increase	wafa:ʔan

Table 5.71: Doubly-weak VNs of the pattern $C_1aC_2a:C_3at$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	1514	h̲ w j	jah̲wi:	to include	h̲awa:jatan
2	3632	ɣ w j	jaɣwi:	to deviate from what is right	ɣawa:jatan
3	3632	ɣ w j	jaɣwa:	to deviate from what is right	ɣawa:jatan
4	5687	w l j	jali:	to rule	wala:jatan

Table 5.72: Doubly-weak VNs of the pattern $C_1iC_2C_3$+an

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Glos[s]	Verbal noun
1	2241	r w j	jarwi:	to quench	rijjan
2	3514	ᶜ j j	jaᶜja:	to be incapable of	ᶜijjan

Table 5.73: Doubly-weak VNs of the pattern $C_1iC_2C_3at+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	5289	n w j	janwi:	to intend	nijjatan
2	5574	w d j	jadi:	to give blood money	dijatan
3	5615	w ʃ j	jaʃi:	to adorn	ʃijatan

Table 5.74: Doubly-weak VNs of the pattern $C_1uC_2a:C_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	3503	ᶜ w j	jaᶜwi:	to bark	ᶜuwa:ʔan

Table 5.75: Doubly-weak VNs of the pattern $C_1iC_2aC_3+an$

Number	Dictionary Entry number	Consonantal root	Imperfective verb	Gloss	Verbal noun
1	2686	s w j	jaswa:	to draw oneself up	siwan

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