Intra-Paradigmatic Contrast in Arabic Verbal Morphology*

David Teeple

1 Introduction

Arabic verbs exhibit a morphologically conditioned stem ablaut which has been attributed in relatively recent literature to an apophonic scale (Guerssel and Lowenstamm 1996; Ségéral 1997). I show here that this apophonic scale is unnecessary, and that Arabic ablaut can be attributed instead to maximized contrast along the dimension of morphosyntactic aspect, employing constraints motivated by Rebrus and Törkenczy (2005). The choice of ablaut vowel has already been shown to depend most directly upon vocalic height features (Brame 1970; McCarthy 1979, 1981; McOmber 1993), and therefore my analysis hinges on constraints demanding faithfulness to the feature [high]. Other vowel feature faithfulness constraints must be more highly ranked.

1.1 The evidence

In Classical Arabic, perfect and imperfect verb stems often contrast in vowel quality. In the examples below, contrasting vowels are underlined. Aside from distinguishing one aspect from another, the vowel contrast appears to serve no morphological or phonological purpose. It could be viewed as simply a case of partial suppletion, but the pattern is so systematic throughout the lexicon that one would like to be able to say more than simply that the various verbal allomorphs are listed in the lexicon.

(1) a. t- a- ʃra̲b -u
3fs.imperf- active- DRINK -indic

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‘she drinks’

b. ʃ-a-r̲ib -at
(-active-)DRINK -3fs.perf
‘she drank’

(2) a. t- a- qt̲ul -u
3fs.imperf- active- KILL -indic
‘she kills’

b. q-a-t̲al -at
(-active-)KILL -3fs.perf
‘she killed’

(3) a. t- a- ms̲ik -u
3fs.imperf- active- HOLD -indic
‘she holds’

b. m-a-s̲ak -at
(-active-)HOLD -3fs.perf
‘she held’

(4) a. t- u- m-a-zz̲iq -u
3fs.imperf- (epenth.-) (-active-)TEAR -indic
‘she tears’

b. m-a-zz̲aq -at
(-active-)TEAR -3fs.perf
‘she tore’

I will refer to this contrast in vowel quality as ablaut. Though it can appear somewhat chaotic, I show in this paper that ablaut is generally predictable, the perfect vowel being derived deterministically from the imperfect vowel. Ablaut to the perfect stem vowel always involves a change in the height specification of the imperfect stem vowel (McCarthy 1979, 1981; McOmber 1993).

In (5) I provide a representative list of stem pairs, always in the order (imperfect, perfect). I assume that voice morphology, unlike aspect, is affixed in a conventional, concatenative way, rather than associated to a CV-template slot, and that it does not form part of the verb stem. Subscript dots represents pharyngealization, or ‘emphasis’[1].

(5) a. ktub, ktab ‘write’
b. smaʕ, smiʕ ‘hear’
c. skun, skan ‘reside’

[1]see Al-Masri and Jongman (2004) for a discussion of emphasis.

d. ḍrib, ḍrab ‘beat’
e. ʃrab, ʃrib ‘drink’
f. ʕrif, ʕraf ‘know’
g. ʕlam, ʕlim ‘know’
h. dxul, dxal ‘enter’
i. kbar, kbir ‘grow older’

1.2 A preview of the proposal

In this paper, I propose a contrast-based account of ablaut in Optimality Theory (OT) (Prince and Smolensky 1993/2004). I analyze ablaut as contextual allomorphy in the perfect aspect, employing constraints from a family proposed by Rebrus and Törkenczy (2005), CONTRAST(D), which militates for contrast along specific morphosyntactic dimensions, such as tense or person, etc. In the Classical Arabic verbal paradigm, the relevant dimension is aspect.

The analysis accounts for the predictability of ablaut vowel quality, by ranking specific vowel feature faithfulness constraints with respect to one another.

I also account for apparent exceptions to the pattern. Pairs like those in (6) fail to show ablaut, but for principled reasons.

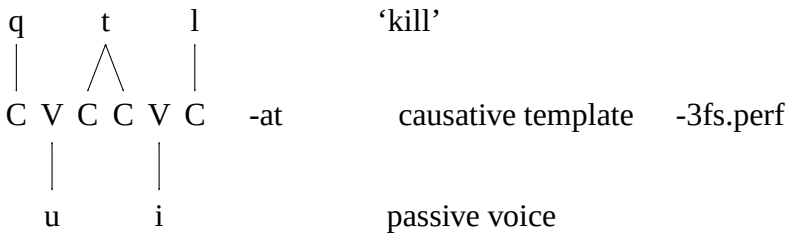
(6) a. qraʔ, qraʔ ‘read’
b. jmaʕ, jmaʕ ‘gather’
c. kbur, kbur ‘grow larger’
d. ṣɤur, ṣɤur ‘grow smaller’

Specifically, the (a, a) pairs are morphophonologically conditioned, while the [u] in (u, u) pairs is a separate morpheme – the inchoative – which must surface faithfully.

2 Background: Arabic Morphology

Classical Arabic exhibits some very interesting prosodic morphology, of the sort occasionally referred to as ‘root-and-pattern’. The root consists of only consonants, while the pattern is thought by some to consist of C and V slots, autosegmentally associated to a root and to vowel-heavy affixal material. Such is McCarthy’s 1979 analysis of Semitic morphology (see (7)).

(7) quttilat ‘she was forced to kill’



The notion of CV templates has been more or less replaced by prosodic constraints on morphology (McCarthy and Prince 1986, 1990, 1995b; Bat-El 1994, 2003; Ussishkin 2000). The apparent prosodic templates are not themselves morphemes, nor are they even manipulated by the grammar; instead, templates emerge from the interplay between a conventional prosodic system and a rather unusual lexicon, where most content morphemes consist only of consonants (i.e., *consonantal roots*, which are not roots in the traditional morphological sense) and vocalic morphemes are necessarily infixed to avoid marked syllable structures.

Ussishkin (2000) (following Bat-El (1994)) actually treats the consonantal root as a derivative non-entity. In his theory, the perfect/past stem is basic, but melodic overwrite of stem vowels by vocalic affixes creates the illusion that only the consonants are lexically stored. In arguing for the fundamentality of the perfect stem in Hebrew, he claims that the imperfect/future is prosodically predictable, while the perfect/past is not: only the perfect can be monosyllabic, while all imperfect stems are minimally disyllabic.

For Arabic, however, I follow Benmamoun (1999) in assuming the imperfect stem to be fundamental. Given this, then the surface form of the perfect stem will be based on the imperfect stem (perhaps transderivationally, in the sense of Benua (1997), though there is no real reason to assume so here.) The assumption that the imperfect is basic is based on two types of evidence: morphosyntactic and phonological.

Morphosyntactically, the imperfect stem is clearly the default, occurring under most types of negation, in any tense including the past; in the affirmative it is used both for the present and the future, as well as imperatives. The perfect stem is limited to the affirmative past tense, and to the negative past tense under sentential negation (*maa*). It clearly has the more limited application, and moreover never occurs with any non-perfective meaning (see Benmamoun (1999) for elaboration).

Phonologically, the perfect stem is more or less predictable from the imperfect, while the reverse is not true (McOmber 1993). It is this predictability which I model in OT terms below.

Given such evidence, I will assume an underlying form for each verb based on the imperfect stem. Paradigmatic contrast will conflict both with IO faithfulness (McCarthy and Prince 1995a) and OO faithfulness (Benua 1997).

In much of what follows, I leave voice morphology out of the verbal stem, in defiance of the usual custom: the active perfect *qatal* is here reduced to the perfect *qtal*, without the active voice vowel. I assume that voice is not part of the stem, but that it is concatenated to the stem, often infixing in order to avoid marked syllable structures. Aside from this more theoretical reason, the

exclusion of voice from the stem makes more transparent the relationship between the imperfect and perfect stems, with respect to the coming discussion of ablaut.

Concatenative affixation of the active voice morpheme to a stem is illustrated in (9). The relevant constraints are defined in (8). In the tableau, the active voice prefix /a-/ is infixed to satisfy ONSET, yielding a violation of PREF, L. For the moment, I assume the perfect vowel in the input, though I take pains to argue otherwise in the next section.

(8) a. DEP-IO (McCarthy and Prince 1995a, 1999)
Count a violation for every output segment that has no input correspondent.

b. ONSET (Prince and Smolensky 1993/2004)
Count a violation for every syllable that has no onset.

c. PREF, L (McCarthy and Prince 1993)
Count a violation for every instance of the left edge of a prefix not aligned with the left edge of a prosodic word.

(9) *qatalat*[2] 'she killed'

Input: /a-/ /qtal/ /-at/	DEP-IO	ONSET	PREF, L
☞ a. qa.ta.lat			*
b. aq.ta.lat		*!	
c. ʔaq.ta.lat	*!		*

In contrast to the CV skeleton approach of McCarthy (1979, 1981), where the vocalic melody is mapped to V skeletal positions, here the vocalic morpheme is situated by syllabification concerns alone (compare with the discussion of Tagalog /um-/-infixation in McCarthy and Prince (1993)). This characterizes my approach to Semitic morphology generally: it is concatenative, and is largely governed by prosody. My approach follows the Prosodic Morphology Hypothesis (McCarthy and Prince 1986), which seeks to explain all morphology as concatenative, and to explain all discrepancies in the morphology-phonology interface as motivated by prosodic concerns.

In the imperfect aspect, the voice morpheme does not infix as it does in the perfect aspect, but instead prefixes. Again, this is due to the influence of prosody. This is shown in (10).

(10) *taqtul*[3] 'she kills'

Input: /t-/ /a-/ /qtul/	ONSET	PREF,L
☞ a. taq.tul		*
b. qat.tul		**!
c. atq.tul	*!	*

[2]Glosses: /a-/ active, /qtal/ KILL, /-at/ 3fs.perf.
[3]Glosses: /t-/ 3fs.imperf, /a-/ active, /qtul/ KILL.

As indicated, the active voice morpheme is inherently a prefix, but surfaces as an infix only when prosodic concerns rule against aligning it with the left word edge.

Nothing in these tableaux indicates why a different stem of the verb is selected in each aspect. This is the subject of the main body of the discussion, in the following sections.

3 Ablaut and Non-Ablaut in Simple Stems

Ablaut in the Arabic verbal system can be attributed to a need for enhanced contrast between stems in a paradigm. If faithfulness to vowels is prioritized rather low in Semitic, the most natural means of enhancing contrast (while doing minimal violence to the input) is to alter surface vowel specifications.

3.1 Attested and Unattested Ablaut Patterns

Theoretically, any ablaut could realize the contrast between imperfect and perfect stems. The aspectual vowel pairs in (11) are all possible, *a priori*, given the inventory of Arabic, which includes only the three vowel qualities /i/, /u/ and /a/, with a phonemic length contrast. However, bolded pairs are unattested.

(11)

(Imperfect, Perfect)	Examples
(a, u)	**unattested**
(a, i)	ʃrab, ʃrib ‘drink’
(u, i)	**unattested**
(u, a)	ktub, ktab ‘write’
(i, u)	**unattested**
(i, a)	msik, msak ‘hold’

Interestingly, ablaut to [u] in the perfect is unattested. As noted by Brame (1970) (see also McCarthy 1979, 1981; McOmber 1993), the ablauted vowel always changes in height specification; it also changes in either roundness or backness accordingly, since there are no single-feature differences between vowels in a three-vowel system. Brame’s observation has greater explanatory depth than the ablaut path proposals of various Government Phonology studies (among which, Guerssel and Lowenstamm 1996; Ségéral 1997). Ablaut under those proposals is assumed to follow a particular fixed path, where the perfect stem is taken as basic: /i/ becomes [a], /a/ becomes [u], and /u/ remains [u]. There is no real phonological basis for the pathway – it is purely descriptive. An analysis which provides an explanation for the directionality of ablaut should be preferred.

In Arabic, given a perfect stem in [a], it cannot be predicted whether the imperfect stem will have [u] or [i]. In reverse, the relationship is predictable: imperfect [u] predicts perfect [a], imperfect [i] predicts perfect [a], and imperfect [a] predicts perfect [i].

We could perhaps posit a perfect aspect morpheme bearing an anti-αhigh specification. This solution is not descriptively inadequate, although one wonders what the specification anti-αhigh would actually mean. I will not entertain this option.

Instead, following Rebrus and Törkenczy (2005), I assume a constraint demanding contrast along some morphosyntactic dimension D, CONTRAST(D). In the Arabic verbal system, D is perfect aspect. However, my formulation of the constraint (12) demands only contextual allomorphy, not feature realization, *per se*, as Rebrus and Törkenczy's constraints do.

A word about contextual allomorphy versus feature expression is in order. I assume that verb stems do not themselves express aspect in Arabic. Rather, expression of aspect is left to various agreement affixes. The verb stems do, however, show contextual allomorphy according to their aspectual context. I make this distinction because, while verb forms *always* contrast for aspect by means of the agreement affixes, stem allomorphy is occasionally lacking from a paradigm, without any real loss of information. This is compatible with the assumption that contextual allomorphy, which is usually non-distinctive, is less important than morpheme realization, which is usually distincitve. Given this set of assumptions, ablaut cannot be attributed to morpheme realization constraints.

(12) CONTRAST(PERFECT)
Count a violation for an output stem in the context of the feature [perfect] which is phonologically non-distinct from the output imperfect stem.

Formally, CONTRAST(PERFECT) is a kind of Anti-Faithfulness constraint (Alderete 2001). It imposes anti-faithfulness requirements on the perfect aspect form only, in keeping with the claim that the imperfect is the basic form. It must be assumed that the constraint cannot be violated in the evalution of an imperfect stem, since otherwise it could be satisfied by a change to that stem, instead of to the perfect. The maintenance of this asymmetry will have to remain a stipulation in my account. Since CONTRAST(PERFECT) is violated in paradigms which show uniformity of stems across both aspects, PARADIGM UNIFORMITY (PU) (Steriade 2000; Kenstowicz 1996) must be ranked below CONTRAST(PERFECT).

The ranking CON(PERF) $\gg$ FAITH-IO is crucial to the analysis, since I understand the imperfect stem to faithfully reflect the input stem in the usual case. The underlying representation of the stem serves as the base for both the imperfect and the perfect, hence IO faithfulness is of primary concern. I do assume that FAITH-OO (Benua 1997) mediates between the output imperfect and perfect stems, but that it ranks below FAITH-IO, and hence usually has no effect.

3.2 Ablauting Pairs

In (13), the input /ktub/, which surfaces faithfully in the imperfect as [ktub], is forced to some phonological change in the perfect, the faithful form being ruled out by CON(PERF). This leaves two forms as potential winners, though in the end (13a) must be selected.

(13) *ktab* ‘write (perf)’

Input: /ktub/ (+[perf]) Imperf: [ktub]		CON(PERF)	FTH-IO	FTH-OO
☞	a. ktab		*	*
☞	b. ktib		*	*
	c. ktub	*!		

The ranking CON(PERF) ≫ FAITH-IO will force some change (where higher-ranking constraints do not countermand the effects of CON(PERF), as in the non-ablauting stem pairs to be analyzed shortly.) This change affects only vowels, FAITH-C constraints being highly ranked in Arabic. The ranking FAITH-C ≫ FAITH-V is partially responsible for the emergence of consonantal roots.

Since in tableau (13), as elsewhere, FAITH-OO has no discernible effect, I exclude it from further discussion.

To decide between candidates (a) and (b), I appeal to IO faithfulness to specific features of the vowels. I consider here only the dorsal features [round], [back], and [high]. The analysis will require the ranking IDENT-[RND] ≫ IDENT-[BK] ≫ IDENT-[HI] (constraints based on McCarthy and Prince (1995a, 1999) and Benua (1997)). Definitions of these constraints are given in (14).

(14) a. IDENT-[RND]
Count a violation for every output segment whose specification for [rnd] differs from that of its input correspondent.

b. IDENT-[BK]
Count a violation for every output segment whose specification for [bk] differs from that of its input correspondent.

c. IDENT-[HI]
Count a violation for every output segment whose specification for [hi] differs from that of its input correspondent.

An argument for the ranking IDENT-[BK] ≫ IDENT-[HI] is given in (15). Here, the ranking crucially decides between a /u/-[a] mapping and a /u/-[i] mapping, the latter being unattested in Arabic.

(15) *ktab* ‘write (perf)’

Input: /ktub/ (+[perf])		ID-[RND]	CON(PERF)	ID-[BK]	ID-[HI]
☞	a. ktab		*		*
	b. ktib		*	*!	
	c. ktub	*!			

Hence, the grammar decides on a /u/-[a] mapping. As observed earlier, /u/ never ablauts to [i]. The ranking so far conforms to the data.

We have also observed that imperfect [i] reliably predicts perfect [a]. This provides an argument for the ranking IDENT-[RND] ≫ IDENT-[HI], since the reverse ranking would select ablaut to [u], which never occurs. This effect of the ranking is illustrated in (16).

(16) *msak* 'hold (perf)'

Input: /msik/ (+[perf])	ID-[RND]	ID-[BK]	ID-[HI]
☞ a. msak		*	*
b. msuk	*!	*	

Given the choice between changing height specification and changing roundness specification, the grammar always opts for the former.

Last among the ablauting pairs is (a, i). Here we have an argument for the ranking IDENT-[RND] ≫ IDENT-[BK], since the ungrammatical candidate involves a reversed roundness specification, while the grammatical candidate involves a reversed backness specification.

(17) *ʃrib* 'drink (perf)'

Input: /ʃrab/ (+[perf])	ID-[RND]	ID-[BK]	ID-[HI]
☞ a. ʃrib		*	*
b. ʃrub	*!		*

To summarize, I have provided arguments for the rankings IDENT-[RND] ≫ IDENT-[BK], IDENT-[RND] ≫ IDENT-[HI], and IDENT-[BK] ≫ IDENT-[HI]. We then have the complete ranking shown in (18).

(18) CONTRAST(PERFECT)
|
IDENT-[RND]
|
IDENT-[BK]
|
IDENT-[HI]

This ranking accounts for most ablauting pairs.

3.3 Non-Ablauting Pairs

As shown in (19), there exist non-ablauting stems pairs in (u, u) and (a, a), but explanations for these apparent exceptions to the pattern are not difficult to come by.

(19)

(Imperfect, Perfect)	Examples
(u, u)	kbur, kbur ‘to grow large’
(a, a)	jmaʕ, jmaʕ ‘to gather’

3.3.1 Non-Ablaut for Morphological Reasons

The pair (u, u) has an obvious morphological basis: the vowel itself is a morpheme bearing inchoative meaning, and is thus stable across the paradigm. I attribute this stability to the constraint ranking PAR(INCHOATIVE) ≫ CON(PERF), where PAR(D) constraints militate for paradigm uniformity along some dimension. The morphemic status of the vowel is evident when we compare *kbur, kbur* ‘to grow large’ with the ablauting pair *kbir, kbar* ‘to be larger/older than’.

(20) a. PAR(INCHOATIVE)
The inchoative morpheme should be realized uniformly.

The ranking PAR(INCHOATIVE) ≫ CON(PERF) results in faithfulness to the inchoative affix in preference to contextual stem allomorphy. In a sense, PAR(INCHOATIVE) is akin to morpheme realization constraints (see Kurisu 2001). However, there is a crucial difference: The morpheme could be realized by ablaut under REALIZEMORPHEME, but is forced not to ablaut under PAR(INCHOATIVE).

The ranking is illustrated in (21), where the morpheme /-u/, which bears inchoative meaning, surfaces faithfully within the perfect stem. The imperfect stem is itself derived by affixation of the inchoative morpheme to the consonantal root /kbr/, which is associated with the meaning ‘big’ or ‘old’.

(21) *kaburat*[4] ‘she grew large’

Input: /a-/ [/kbr/ /-u/] /-at/ Imperf: [kbur]		PAR(INC)	CON(PERF)
☞	a. kaburat		*
	b. kabarat	*!	
	c. kabirat	*!	

The output stem in (21) is [kbur], though of course it is not contiguous, being interrupted by the active voice morpheme. The /u/ cannot ablaut because it is subject to high-ranking Paradigm Uniformity constraint.

Compare this with a stem which has no such affix, like that in (22).

[4]Glosses: /a-/ active, /kbr/ BIG, /-u/ inchoative, /-at/ 3fs.perf.

(22) *katabat*[5] 'she wrote'

Input: /a-/ /ktub/ /-at/ Imperf: [ktub]	PAR(INC)	CON(PERF)	ID-[BK]
☞ a. katabat			
b. katibat			*!
c. katubat		*!	

Since the input vowel is not an affix but part of the underlying stem, PAR(INC) has no sway over it, hence ablaut occurs as expected.

3.3.2 Non-Ablaut for Phonological Reasons

On the other hand, the occurrence of the pair (a, a) has a mostly phonological explanation. Such pairs occur only in stems with glottal or pharyngeal root consonants (collectively, gutturals), consonants known to trigger vowel lowering; hence these pairs are somewhat predictable on phonological grounds. Whatever effect ablaut might be expected to have is overridden by the lowering effect of the guttural consonant. This is not a complete explanation, since some ablauting pairs also have guttural radicals. However, among simple stems there do not seem to be any (a, a) pairs which do *not* have a guttural.

Formally, my analysis of the (a, a) pairs involves a constraint GUTTURALLOWERING$_{VStem}$ (GUTLOW), shown in (23), which demands a low vowel in the context of a guttural consonant, within the verb stem domain. This sort of lowering has been phonetically substantiated by McCarthy (1994). What is perhaps unexpected is that the constraint should refer to a morphosyntactic category (verb stem); however, this simply means that guttural lowering is now morphophonologically conditioned, rather than purely phonologically. This is essentially the translation of a lexical redundancy rule (Aronoff 1976) into constraint terms.

(23) GUTTURALLOWERING$_{VStem}$ (GUTLOW)
Count a violation for any vowel of a verb stem specified [-low] that is adjacent to a guttural consonant, {h, ʔ, ħ, ʕ}.

Given the ranking GUTLOW $\gg$ CON(PERF), we would predict there never to be ablaut when the stem contains a guttural penultimate or ultimate radical. This is not true, of course. There exist stem pairs which both have guttural second or third radicals and show ablaut. Compare the forms in (24).

(24) a. smaʕ, smiʕ 'hear' (ablaut)
b. jmaʕ, jmaʕ 'gather' (no ablaut)

[5]Glosses: /a-/ active, /ktub/ WRITE, /-at/ 3fs.perf.

Instead, I adopt the crucial non-ranking {CON(PERF), GUTLOW}, and consequently have to make some new assumptions explicit. Since certain guttural-bearing verbs trigger lowering while others do not, and since phonology alone cannot tell us which is which, my analysis hinges on certain assumptions about the featural specifications of input vowels. Namely, I assume that verb stem pairs in (a, i) have /i/ underlyingly. The inputs for (24a) and (24b) are thus /smiʕ/ and /jmaʕ/, respectively. This means that the perfective of verbs with gutturals is actually faithful to the input vowel. What ranking achieves this end?

My claim is as follows. When CON(PERF) and GUTLOW fail to decide between two candidates, the competition falls to lower-ranked constraints, specifically those under the IDENT-IO rubric.

Forms like *smaʕ, smiʕ* result when an underlying /i/ is forced to lower in the imperfect, as shown in (25).

(25) *tasmaʕ*[6] 'she hears'

Input: /t-/ /a-/ /smiʕ/		CON(PERF)	GUTLOW	ID-[RND]	ID-[BK]
☞	a. tasmaʕ				*
	b. tasmuʕ		*!	*	*
	c. tasmiʕ		*!		

Since the output imperfect stem has [a] – a non-faithful IO mapping – CON(PERF) will actually select the underlying vowel /i/ in the perfect aspect, as shown in (26).

(26) *samiʕat*[7] 'she heard'

Input: /a-/ /smiʕ/ /-at/ Imperf: [smaʕ]		CON(PERF)	GUTLOW	ID-IO
☞	a. samiʕat		*	
	b. samuʕat		*	*!*
	c. samaʕat	*		*!*

Crucially, candidate (26c) fails because there is no contrast between the output imperfect and perfect stems.

When the input vowel is /a/, no ablaut is possible. First, the imperfect obligatorily shows [a]. Other candidates are harmonically bounded with respect to the three constraints shown in (27).

[6]Glosses: /t-/ 3fs.imperf, /a-/ active, /smiʕ/ HEAR

[7]Glosses: /a-/ active, /smiʕ/ HEAR, /-at/ 3fs.perf.

(27) *tajmaʕ*[8] 'she gathers'

Input: /t-/ /a-/ /jmaʕ/	CON(PERF)	GUTLOW	ID-IO
☞ a. tajmaʕ			
b. tajmuʕ		*!	**
c. tajmiʕ		*!	**

Since CON(PERF) has no effect in the imperfect, GUTLOW must be satisfied.

However, in the perfect, CON(PERF) and GUTLOW fail to select any candidate at all. Therefore, the decision falls to lower ranked IDENT-IO, which decides in favor of the faithful (28a).

(28) *jamaʕat*[9] 'she gathered'

Input: /a-/ /jmaʕ/ /-at/ Imperf: [jmaʕ]	CON(PERF)	GUTLOW	ID-IO
☞ a. jamaʕat	*		
b. jamuʕat		*	*!*
c. jamiʕat		*	*!*

Thus, the constraint ranking correctly predicts [a] for both the perfect and the imperfect stem.

As illustrated, the non-ranking of CON(PERF) and GUTLOW is crucial to the analysis. It is an interesting result, though potentially problematic, depending on one's view of the resolution of ties.

4 Conclusion

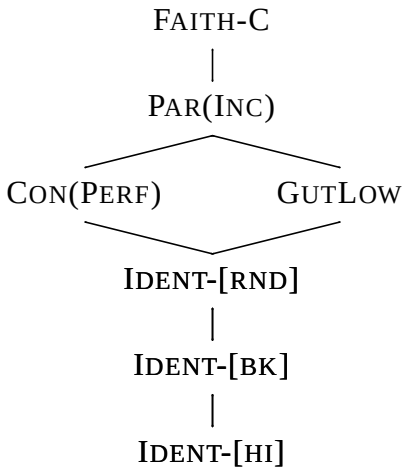
I have shown that constraints demanding paradigm contrast along a specific morphosyntactic dimension, following Rebrus and Törkenczy (2005), can account for contextual allomorphy in Arabic verbal morphology. Contrast in verb stems is always realized by differences in vowel quality, since faithfulness to vowels is ranked lower than faithfulness to consonants in Arabic. Failure to show this sort of allomorphy can be attributed in some cases to demands on uniform realization of an affix; in other cases, to phonological demands.

The complete constraint ranking needed to account for Arabic ablaut is shown in (29).

[8]Glosses: /t-/ 3fs.imperf, /a-/ active, /jmaʕ/ GATHER.

[9]Glosses: /a-/ active, /jmaʕ/ GATHER, /-at/ 3fs.perf.

(29)



The high ranking of FAITH-C is, again, essentially what gives rise to the appearance of root-and-pattern morphology, where a consonantal root emerges only because faithfulness to consonants takes priority over faithfulness to vowels.

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Department of Linguistics
Stevenson College
University of California at Santa Cruz
Santa Cruz, CA 95064

david.teeple@gmail.com