Accounting for Dominance in Uzbek: A Scale-based Approach

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Introduction

While linguistic theories strive for generality and exhaustiveness, they must also account for exceptions to the generalizations which they establish. It is highly desirable that generalizations and exceptions to these receive a uniform, non-arbitrary account drawing on the same (or largely shared) grammatical mechanisms.

Systematic exceptions considered in this work are those associated with individual productive morphemes, as opposed to special patterns due to syntactic or grammatical categories, word classes, and alike. Specifically, I address here the problem of accentual dominance. A dominant accented morpheme is one that wins word accent over another morpheme expected to receive it due to the accent rule.

In this article, I present a formal account of dominant accented prefixes in Uzbek (Turkic, Uzbekistan) that uniformly captures both the accent rule and the dominance effects. Interestingly, while dominant suffixes have been identified in many lexical accent systems, dominant accented prefixes appear to be cross-linguistically rare (albeit attested, *e.g.* Tokyo Japanese).

The central problem addressed in this article is, then, how to capture both regular accent patterns and exceptional patterns (due to special morphemes) using the same accentual grammar.

The present account of accent assignment in Uzbek is stated within the *Scales-and-Parameters* (S&P) theory which I briefly introduce (for detailed discussion, *cf.* Vaxman 2016b). S&P takes as a point of departure the Primary Accent First (PAF) theory elaborated by van der Hulst (1996, 2010, 2012).

I follow PAF in assuming separation of accent ("primary stress") and rhythm ("non-primary stress"). Indeed, research on asymmetries between accent and rhythm lends support to the claim that there is no unique, holistic object "stress" (*contra* the SPE and metrical stress theories); rather, accent and rhythm are two different linguistic objects (*cf.* Goedemans and van der Hulst 2014, van der Hulst 1996, 2010, 2012, McGarrity 2003, *a.o.*). Accordingly, they need to be assigned on separate phonological planes by distinct mechanisms. At the present stage, research in S&P focuses on word accent.

The article is organized as follows. Section 1 describes accent placement in Uzbek, including dominance effects triggered by several prefixes. Section 2 introduces the fundamentals of the S&P theory and shows that it allows for an integrated account of Uzbek facts, in particular, of the dominance effects in Section 1. At the end, a conclusion sums up the results.

1 Description

Recent years have seen an increased interest in Uzbek, including several revealing phonological studies (*e.g.* Zhou and Vogel, this volume). However, compared to other areas, Uzbek phonology, and prosody in particular, remain severely under-investigated. The present section describes Uzbek accentuation as a representative lexical accent system with dominant accented affixes. Due to space limitations, I focus here on the standard dialect. For data, the article relies on Sjoberg (1962, 1963) and Bodrogligeti (2003).

1.1 *Uzbek as a lexical accent system*

Accent location is variable in Uzbek. Moreover, one finds many minimal accentual pairs among morphologically simple (1) and complex forms (2).

(1)   a. eˈtik
           boot
           'boot'

        b. ˈetik
           ethics
           'ethics'

(2)   a. bun-ˈda
           this-LOC
           'at this'

        b. ˈbun-da
           this-EMPH
           'this, too'

Therefore, accent location in Uzbek is phonologically unpredictable: Uzbek is a lexical accent system.
    The default accent is final in Uzbek, a common feature of Turkic languages. Thus, in morphologically simple words, accent falls on the root-final syllable (3a); when a suffix is attached, accent shifts onto the last syllable of the resulting word (3b); under multiple suffixation, accent is, again, word-final (3c). This supports the conclusion that default accent in Uzbek falls on the last syllable.

(3)   a. kiʃˈlok
           village
           'village'

        b. kiʃlok-ˈlar
           village-PL
           'villages'

        c. kiʃlok-lar-iˈmiz
           village-PL-Poss.1PL
           'our villages'

Uzbek also has some accent-affecting affixes that disrupt default accentuation by attracting word accent either onto themselves (lexically accented affixes), or onto the last syllable of the immediately preceding morpheme (preaccenting affixes). In traditional terms, the accent rule of Uzbek must refer to lexical accents on individual morphemes and to their preaccenting ability (if any). Specifically, it emerges from linguistic descriptions that Uzbek is a Last/Last lexical accent system:

(4) *Accent falls on the rightmost lexically accented morpheme; otherwise, accent is final.*

The default pattern described by the second clause in (4) has been exemplified in (3). I now turn to the non-default clause (*i.e.* words containing lexically accented morphemes). As an example, in (5), with the accented /boʃ/ and /moq/ and the unaccented /-la/, accent falls on /-moq/, the rightmost lexically accented morpheme. Therefore, it is the rightmost lexically accented morpheme that wins in Uzbek.

(5) boʃ-la-ˈmoq
   head-VBZ-NMZ
   'beginning'

In addition to lexical (un)accentedness, some Uzbek morphemes are *preaccenting,* as seen in (6). Thus, word accent on the root in (6a) indicates that the suffix /-di/ does not bear a lexical accent. By contrast, when the suffix /-da/ is attached immediately after /-di/ (6b), accent falls on /-di/, which implies that /-da/ is preaccenting.

(6)   a. ˈkel-di
       come-PAST
       '(he) came'

     b. kel-ˈdi-da
       come-PAST-INTENS
       '(he) did come'

1.2 *Accentual dominance in Uzbek*

Another important accentual property of morphemes, distinct from accentedness and preaccenting, is dominance. A dominant accented morpheme is an exceptional morpheme which receives word accent, regardless of the accentual properties of the other morphemes contained in the form. This section examines patterns with accented dominant morphemes in Uzbek.

As an example, consider (7). In (7a), accent falls on the root [qaer]; hence, it is lexically accented.

(7)   a. ˈqaer-da
       where-LOC
       'where'

     b. ˈalla-qaer-da
       INDEF-where-LOC
       'somewhere'

Since the root is accented and /-da/ is not, it is predicted that attachment of a prefix would not affect accent location: accent is expected to remain on the root [qaer], the rightmost lexically accented morpheme. However, prefixing /alla-/ results in prefixal accent (7b). What we encounter here is *dominance*: [alla-] is an accented dominant prefix.

In addition to /alla-/, Uzbek has a few other morphemes (/ser-/ 'much', /nɔ-/ 'un-') that receive word accent even when the root is lexically accented and that are, therefore, dominant and accented.

Traditionally, dominant exceptions are captured separately from the accent rule via a dedicated mechanism of some sort, typically an Accent Deletion rule (Kiparsky 1984, Halle and Vergnaud 1987, Idsardi 1992, *a.o.*). The present goal is to construct an accentual grammar that uniformly derives regular and exceptional (morphologically conditioned) patterns. The next section describes how this can be achieved in the case of Uzbek.

2 The account

2.1 *The parameter system*

The S&P grammar, which I introduce, contains several components, notably a parameter system which assigns accent within the accent domain located on the so-called *Accent Grid* (AG), a non-metrical grid dedicated to accent assignment (Vaxman 2016a,b, to appear). The *accent domain* is a span of syllables within which accent may fall. S&P does not recognize feet.

The system contains 7 binary parameters. Notably, the *Weight* parameter (Yes/No) determines whether a given language is weight-sensitive or not. Further, an accent domain is either bounded (binary), or unbounded (the entire word), which corresponds to the choice between the "Bounded" and "Unbounded" settings of the *Domain Size* parameter, respectively.[1] If there is at least one heavy syllable in the domain, then the *Select* parameter (Left/Right) chooses the leftmost/rightmost heaviest syllable in the domain for accent. In all-light forms, a default peripheral accent is assigned, essentially, by the *Project Position* parameter.

Another grammatical component contains the so-called *Weight Grids* (WG), phonological representations encoding weight distinctions, in particular scalar ones. The interface between the Weight Grid and the Accent Grid is constrained by the *Weight Projection Principle*, which states that, for a given form, only the heaviest units are projected from the former onto the latter.

In the remainder of this section, I build a generalized theory of weight and accent assignment, illustrated with the case of Uzbek.

2.2 *Diacritic weight. Diacritic weight scales*

S&P goes beyond syllable weight, extending the "weight" notion to morphemes. Similar to syllables, morphemes are capable of attracting or repelling word accent: when combined with other morpheme(s), some receive word accent, while some do not get accented (except by default, *i.e.* when there are no lexically accented morphemes in the form). Following van der Hulst (1999:9), I view this capacity not as a lexical accent, but as "diacritic weight" encoded in the lexical entry of individual morphemes. Thus, accent-

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[1] Note that all but a handful lexical accent systems (Avar, Hanis Coos) are clearly unbounded (including Uzbek), which suggests that the class of lexical accent systems involves Domain Size (Unbounded).

attracting morphemes are diacritically heavy (h_d), rather than lexically accented, while accent-repelling morphemes are diacritically light (l_d), rather than lexically unaccented.

The question arises, then, whether syllable weight and diacritic weight are different notions or, rather, different instances of the same notion "weight". Obviously, syllable weight is phonologically motivated by syllable structure and/or segmental properties, whereas diacritic weight is unpredictable and must, therefore, be lexically specified. However, since syllable weight and diacritic weight pattern together in attracting word accent, I conclude that diacritic weight is a type of weight in general.

Importantly, since weight is an *ordinal* variable, it allows for *weight scales*. Indeed, many accent systems have phonological weight scales (Gordon 2006). Since diacritic weight is a type of weight in general and weight is ordinal, it is predicted that there exists at least one system in which accent is assigned with reference to what I call a "diacritic weight scale," *i.e. a language-specific scale which orders (sets of) morphemes according to their relative diacritic weight*.[2] I will now show that Uzbek is one such system.

2.3 *The diacritic weight scale of Uzbek*

In this section, I establish the diacritic weight scale of Uzbek, based on the data and descriptive generalizations in Section 1.

There are three mutually exclusive classes of morphemes in Uzbek:
Class A: *Dominant accented*; Class B: Accent-*attracting*; Class C: Accent-*repelling*

To show that the classes A, B and C form a scale, it must be shown that the binary HEAVIER-THAN relation holds for every pair of morpheme classes. To that end, one must conduct pairwise comparisons between the morphemes of the relevant classes.

For example, through comparisons like those for (8), where /kel/ and /qaer/ in (6a) and (7a), respectively, are Class B morphemes, while /-di/ and /-da/ are Class C morphemes, we establish that Class B morphemes are heavier than Class C morphemes.

(8) a. ˈkel-di   *cf.* (6a)
         come-PAST
         '(he) came'

      b. ˈqaer-da   *cf.* (7a)
         where-LOC
         'where'

Comparisons like those for (9), where /alla-/ is Class A, /qaer-/ Class B and /-da/ Class C, reveal that Class A is heavier than both Class B and Class C.

(9) a. ˈalla-qaer-da
         INDEF-where-LOC
         'somewhere'

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[2] Diacritic weight scales have as a predecessor the "accentual hierarchies" of Garde (1965, 1968) who proposes that in certain lexical accent systems, such as Russian, morphemes are organized into a multi-level hierarchy according to their relative "force accentuelle" ("accentual strength"). Regrettably, Paul Garde did not develop this important proposal into a full-fledged theory. Conspicuously, the proposal lacks a mechanism for accentual resolution when a given form contains more than one strongest morpheme. (For discussion, *cf.* Vaxman 2016b:5-9).

   b. *alla-ˈqaer-da
     INDEF-where-LOC

Hence, the *HEAVIER-THAN* relation is transitive. Obviously, it is also irreflexive and antisymmetric. Therefore, this ordering relation on the set of diacritic weights is an ordinal scale, which I term a *diacritic weight scale*.

Now, we can relabel dominant accented morphemes (Class A) as "diacritically superheavy," accent-attracting morphemes (Class B) as "diacritically heavy" and accent-repelling morphemes (Class C) as "diacritically light" to highlight that these are ordered on a diacritic weight scale.

Summarizing, through pairwise comparisons between morphemes of different accentual classes, I have shown that Uzbek has the diacritic weight scale (10).[3]

(10) diacritically superheavy > diacritically heavy > diacritically light

2.4 *The Weight Grid*

Note that weight scales (whether phonological or diacritic) are not a linguistic representation: no operation may manipulate the components of a weight scale (while, as we shall see, this is empirically needed). For this reason, weight scales are not granted a theoretical status in S&P. Instead, weight relations specified by a weight scale are formally encoded in terms of a *Weight Grid*.

A WG consists of gridmarks arranged in columns. For a given unit (here, a morpheme), the number of gridmarks in its column represents the degree of weight of this unit on the weight scale. Thus, the scale in (10) is encoded as the following WG for Uzbek.

(11) sup_d h_d l_d

     *   *   *
     *   *
     *

On a WG, rules may apply to affect gridmarks in a column and, thus, change the weight of the relevant morpheme. Since elements of a WG may be targeted by rules, it is not merely a graphical equivalent of the weight scale, but a genuine phonological representation.

2.5 *Gridmark Insertion*

Preaccenting suffixes are analyzed in S&P as diacritically light morphemes making the immediately preceding diacritically light morpheme heavy. This is formally captured using the general *Gridmark Insertion rule* (12) triggered by preaccenting morphemes.

(12) *Insert a gridmark on line 2 of the Weight Grid over the last syllable of a light mor-*
    pheme if this is immediately followed by a preaccenting morpheme.

Recall from Section 1.1 that Uzbek has preaccenting suffixes. Application of (12) is

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[3] Henceforth, the subscript "d" stands for "diacritically;" "h", "l" and "sup" stand for "heavy", "light" and "superheavy," respectively. For example, "h_d" reads as "diacritically heavy".

exemplified below for (6b), which contains the preaccenting suffix **/-da/**.[4]

(13) /kel/ *diacritically heavy*, /di/ *diacritically light*, /-da/ *preaccenting*

			→			
*	*	*		*	*	*
*				*	*	
kel - di - da				kel - di - da		
h_d	l_d	$^\wedge l_d$		h_d	$\boldsymbol{h_d}$	$^\wedge l_d$

Weight Grid

2.6 *Derivations*

Below, I illustrate with several derivations how the S&P grammar assigns accent to Uzbek forms.

(i) In regular forms that contain *more than one diacritically heavy morpheme*, *e.g.* (5), after heavy morphemes have been projected onto the AG, Select (Right) chooses the rightmost gridmark in the unbounded accent domain by placing a gridmark on its top. This assigns accent on the rightmost diacritically heavy morpheme in (14). This prediction is, indeed, borne out.

(14) /boʃ/, /moq/ *diacritically heavy*, /-la/ *diacritically light*

		*	Select (***Right***)	line 2
(*		*)	Weight Projection	line 1
*	*	*	Weight Grid	
*		*		
boʃ-la-moq			[boʃlaˈmoq]	

(ii) In regular forms that *lack diacritically heavy morphemes*, such as [paxta-kor-ˈlar] (cotton-worker-PL, 'cotton workers'), default final accent is assigned. There are no heavy units in the form, hence nothing to project onto line 1. However, since accent is obligatory in Uzbek, Project Position (Right) supplies a gridmark to the empty line 1 over the final syllable; then, Select (Right) vacuously assigns a gridmark on line 2 on top of the line 1 gridmark, correctly yielding final accent.

(15) /paxta/, /-kor/, /-lar/ *diacritically light*

		*	Select (***Right***)	line 2
(		*)	Project Position (Right)	line 1
*	*	*	Weight Grid	
paxta -kor-lar			[paxtakorˈlar]	

(iii) In forms with *preaccenting* morpheme(s), Gridmark Insertion adds a gridmark on the WG to the column of the immediately preceding diacritically light morpheme, making it heavy. In the derivation (16) for [kelˈdida] (6b), the preaccenting suffix /-da/ triggers

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[4] By convention, preaccenting morphemes are marked with a circumflex ("^") to their left.

the Gridmark Insertion rule, making the suffix /-di/ heavy on the WG. Then, the heavy /kel/ and /-di/ are projected onto line 1 of the AG, while the light /-da/ is not (due to the Weight Projection Principle). Finally, Select (Right) assigns accent to the rightmost heavy unit, here /-di/. This yields the correct output.

(16) /kel/ *diacriticially heavy*, /-di/ *diacritically light*, /-da/ *preaccenting* ($^\wedge l_d$)

$$
\begin{array}{ccccc}
 & & * & & \text{Select (\textbf{\textit{Right}})} \quad \text{line 2} \\
 & & (\;*\quad * \quad\;) & & \text{Weight Projection} \quad \text{line 1} \\
\rule{2cm}{0.4pt} & \rightarrow & \rule{2cm}{0.4pt} & & \\
\quad\quad* & & *\quad*\quad* & & \text{Weight Grid} \\
* & & *\quad* & & \text{Gridmark Insertion} \\
\text{kel - di - da} & & \text{kel - di – da} & & \\
h_d\quad l_d\quad {}^\wedge l_d & & h_d\quad h_d\quad {}^\wedge l_d & & [\text{kelˈdida}]
\end{array}
$$

(iv) In forms with a *superheavy* morpheme, *e.g.* [alla] in [alla-ˈqaer-da] (7b), analyzed as in (17), it is the heaviest and, therefore, the only morpheme to be projected onto line 1 of the AG (Weight Projection Principle). For example, as discussed in Section 2.3, the prefix [alla-] is diacritically superheavy; hence, this is the heaviest morpheme in (7b). Therefore, it is projected alone on line 1. Then, it is chosen for accent by Select (Right) on line 2, which yields the correct output.

(17) /alla-/ *diacritically superheavy*, /qaer/ *diacritically heavy*, /-da/ *preaccenting*

$$
\begin{array}{lll}
* & \text{Select (\textbf{\textit{Right}})} & \text{line 2} \\
(* \quad\quad\quad) & \text{Weight Projection} & \text{line 1} \\
\rule{2cm}{0.4pt} & & \\
\quad\quad* & \text{Weight Grid} & \\
\quad & & \\
* & & \\
\text{alla-qaer-}^\wedge\text{da} & [\text{ˈallaqaerda}] &
\end{array}
$$

Thus, for both the regular forms and those containing exceptional morphemes, the *same* setting of the Select parameter (*viz.* "Right" in Uzbek) is maintained. I conclude that augmenting the parameter system with the Weight Grid component allows S&P to provide a *uniform* account for both accentual generalizations and dominant exceptions.

3 Conclusion

In this article, I have described accent placement in Uzbek and demonstrated that it receives a straightforward formal account within a *scale-based* theory of word accent (Vaxman 2016a,b, to appear).

Van der Hulst (1999) observes that morphemes have diacritic weight: in lexical accent systems, certain morphemes attract word accent, while others repel it. Since weight is an ordinal variable, it allows for weight scales. This predicts that there exists (at least one) diacritic weight scale, a particular type of weight scale in which sets of morphemes are ordered according to the degree of diacritic weight.

As I have shown, this prediction is borne out in Uzbek, which has the scale (18) encoded as the Weight Grid (11).

(18) diacritically superheavy > diacritically heavy > diacritically light

The ingredients of the S&P grammar are listed in (19).

(19) a. The Weight Grid
     b. The Accent Grid
     c. The parameter system (operating on the Accent Grid)
     d. The Weight Projection Principle (at the Weight Grid / Accent Grid interface)
     e. The Rule Component (operating on the Weight Grid)

In lexical accent systems, such as Uzbek, morpheme-specific exceptionality is due to dominant accented morphemes. Traditionally, their accentual behavior was regarded as irreducibly exceptional and, therefore, requiring special treatment. In this sense, Accent Deletion mechanisms of lexical accent theories are idiosyncratic.

By contrast, in S&P, accent is assigned *uniformly* across words with/without exceptionally behaving morphemes, keeping the same parameter settings for both fully regular forms and forms that contain such morphemes (*e.g.* dominant accented prefixes in the case of Uzbek). This is made possible by reaching beyond binary distinctions (heavy/light, lexically accented/unaccented) to allow for reference to diacritic weight scales.

At the same time, while Accent Deletion is limited to lexical accent systems, reference to different types of weight scales makes S&P sufficiently flexible to uniformly account for accentual generalizations and exceptions in other types of accent systems, such as phonological weight-sensitive systems with accent-attracting/repelling morphemes (*e.g.,* Eastern Literary Mari). In this way, different types of accent systems are uniformly captured using the same accentual grammar (*cf.* Vaxman 2016b, to appear).

Acknowledgments

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