This Word is a Phrase, Phonologically: Evidence from Persian Stress*

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The superficial diversity of stress patterns in Persian has led linguists to suggest a split between Persian lexical categories in this respect. Some examples of Persian words and their main stress are given in (1).[1]

(1)	a. ketâ ´b	"book"	e. xarîd	"s/he bought"
	b. mosâbeqé	"competition"	f. xarîd-am	"I bought"
	c. ketâb-í	"bookish"	g. mí-xar-e	"s/he buys"
	d. divuné	"crazy"	h. ráft-am	"I went"

The examples in (1a-d) show that for nouns and adjectives the main stress goes on the final syllable of the word. As for the verbs in (1e-h), however, the pattern is not as clear. Whereas in (1e), the main stress is on the final syllable, (1f, h) exhibit main stress on the penultimate syllable and (1g) on the initial (or antepenultimate) syllable. As a result of such superficial differences, scholars have proposed different stress rules for nouns and adjectives on the one hand and verbs on the other.

Chodzko (1852) was the first to discuss stress in Persian. He identifies as the basic rule that stress is word final in simple, derived, and compound nouns and adjectives, and nominal verbs. As to verbal stress, he has different rules for different tenses. Ferguson (1957), too, distinguishes verbal stress from the other categories. "It is certainly safe to say that in modern Persian the verb has recessive stress. This is in sharp contrast with the noun, where the stress tends to be near the end of the word" (Ferguson 1957: 26-7). Similarly, Lazard (1992) makes a distinction between non-verbal words and verbs, with the former having the stress on the last syllable and the latter having "recessive stress". Mahootian (1997) points out that stress is word-final in simple nouns, derived nouns, compound nouns, simple adjectives, derived adjectives, infinitives, and the comparative and superlative forms of adjectives as well as in nouns with plural suffixes, and mentions verbal stress as one of the exceptions to this rule. Finally, in her account of Persian stress under a metrical framework, Amini (1997) proposes

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[1] Throughout this paper, the symbol "a" stands for the low front vowel (e.g. Persian *sag* "dog") and "â" stands for the extra-long low back vowel (e.g. *ketâb* "book").

two different word-layer construction rules, i.e. End Rule Left and End Rule Right, which are sensitive to lexical categories. She uses the first rule for prefixed verbs and the second one for all other categories. These attempts show that even a split between verbs and other lexical categories cannot account for the discrepancies observed in the stress pattern of Persian verbs.

The purpose of this paper is to provide a unified (i.e. independent of lexical categories) account of Persian stress. I show that by differentiating word- and phrase-level stress rules, one can account for the superficial differences exemplified in (1) above and many of the stipulations suggested by previous scholars. The paper is organized as follows. In section 1, I look at nouns and adjectives and propose a rule that would account for their stress pattern. In section 2, I extend the stress rule to verbs and show the problem this category poses to our generalization. The main proposal of this paper is discussed in section 3. I introduce the phrasal stress rule in Persian and show that by differentiating word-level and phrase-level stress rules, one can come to a unified account of Persian stress. Section 4 deals with some problematic cases for the proposed generalization and discusses some tentative solutions and their theoretical consequences. Section 5 concludes the paper.

1 Nouns and Adjectives

Some examples of simple nouns and adjectives are given in (2). The stress is word-final.

(2)	a. mú	"hair"	e. xúb	"good"
	b. ketấb	"book"	f. bozórg	"big"
	c. tasâdóf	"accident"	g. divuné	"crazy"
	d. buqalamún	"turkey"	h. motefâvét	"different"

The examples in (3) show the pattern of stress when derivational affixes are added to nouns and adjectives. The symbol ω is used throughout the paper to mark a phonological word (abbreviated as PWord in examples and diagrams). Derived nouns and adjectives have their stress on the last syllable, as in (3a-c). (3d) shows that the nominal plural and the comparative markers behave like derivational suffixes and take stress. The superlative marker, not shown here, also takes stress. Note that, based on other morphological evidence, Kahnemuyipour (2000a) shows that adjectival degree and nominal number are derivational in Persian. Thus, one can maintain the generalization that Persian derivational suffixes take stress.

(3)	a. (ketâb-í)$_{\omega}$	"bookish"	(tasâdof-í)$_{\omega}$	"accidental"
	b. (bozorg-í)$_{\omega}$	"grandeur"	(divune-gí)$_{\omega}$	"craziness"
	c. (nâ-doróst)$_{\omega}$	"incorrect"	(bi-arzésh)$_{\omega}$	"worthless"
	d. (ketâb-â´)$_{\omega}$	"books"	(bozorg-tár)$_{\omega}$	"bigger"

In contrast, the indefinite article *–i*, the relative particle *–i*, the direct object marker *–o* (formally *râ*), the *Ezafe* vowel *–e* (an unstressed vowel *–e* that links nouns to their modifiers and possessors)[2] and the pronominal enclitics do not take stress. These suffixes are inflectional in nature, having syntactic consequences. The stress pattern induced by these suffixes is shown in (4).[3]

(4)	a. (ketâ´b)$_{\omega}$-i	"a book"
	b. (ketâ´b)$_{\omega}$-am	"my book"

The fact that suffixes can behave differently with respect to stress has been attested in many languages. For example, many languages (e.g. Hungarian) parse a sequence of stem plus suffix as a single phonological word, as in (5a), whereas other languages do not parse (some) suffixes with the phonological word of the stem to which they attach, as in (5b). In English, for example, a distinction is made between stress-neutral suffixes (e.g. -ness) and stress-shifting suffixes (e.g. *-ity*). It has been suggested that whereas the former attach at the word level, the latter attach at the stem level.

(5) a. (stem+suffix)$_{\omega}$ b. (stem)$_{\omega}$+suffix

Following Dixon (1977a, b) and subsequent writers, I refer to suffixes that are part of the phonological word (i.e. are of the (5a) type) as 'cohering' and those that are not (i.e. are of the (5b) type) as non-cohering. In other words, all derivational suffixes in Persian are cohering, whereas the inflectional ones and clitics are non-cohering.[4] Note the plausibility of the assumption that the suffixes involved in derivation (i.e. a lexical process) attach to the stem and are part of the phonological word. On the other hand, clitics and inflectional affixes are

[2] For two different accounts of the Persian Ezafe construction, see Ghomeshi (1996) and Kahnemuyipour (2000b, forthcoming).

[3] The editors of the volume point out that the representations in (4) raise an interesting question concerning the relationship between phonological word boundaries and syllable boundaries. While an answer to this question is beyond the scope of this paper, one can imagine several possibilities. For example, it might be argued that the syllabification is VC.V or that the consonant is ambisyllabic. Alternatively, a mismatch in boundaries might be allowed. I leave the question for future research.

[4] Note that, as mentioned above, in a paper presented at the LSA conference (Kahnemuyipour (2000a)), I have argued based on morphological evidence that adjectival degree and nominal number are derivational in Persian. Thus, the suffixes in (3d) are considered derivational.

often considered to have syntactic status and are outside the phonological word. It should also be noted that all cohering suffixes in Persian are linearly ordered before the non-cohering ones, a fact which supports the lexical status of the former.

Finally, compound nouns and adjectives are treated as single words and have their stress on the final syllable, as shown in (6). Note that no affix (inflectional or derivational) can interrupt the two parts of these compounds, i.e. they are treated as single words in this respect too.

(6)	a. (ketâb-xuné)$_{\omega}$	*book-house*	"library"
	b. (gol-forúsh)$_{\omega}$	*flower-seller*	"florist"
	c. (bozorg-manésh)$_{\omega}$	*great-attitude*	"magnanimous"
	d. (bad-báxt)$_{\omega}$	*bad-fortune*	"unfortunate"

So far, we have seen that the word-final stress rule (given below) together with a distinction between cohering and non-cohering affixes can account for the stress pattern in nouns and adjectives.

Word stress rule: The final syllable in the (phonological) word takes stress (End Rule Right).

Next, I will extend the word-final stress rule to verbs.

2 Verbs

In this section and the next, I attempt to account for the stress pattern of verbs in Persian. Recall from the introductory examples in (1) that verbs exhibit a pattern which is different from nouns and adjectives, one that can hardly be captured even with category-dependent rules (see, for example, Amini 1997). I show that this apparent difference can be accounted for if a distinction is made between word-level and phrase-level stress rules in Persian.

Let us start with the simplest form of Persian verbs, i.e. those with no verbal affixes (third person preterites). These verbs follow the word-final stress rule proposed for nouns and adjectives. This is shown in (7).

(7)	a. (ráft)$_{\omega}$	"s/he went"
	b. (xaríd)$_{\omega}$	"s/he bought"
	c. (tarâshíd)$_{\omega}$	"s/he sharpened"

Person agreement suffixes are non-cohering in Persian. Thus, as shown in (8), they do not

attract stress. Recall from the previous section that inflectional affixes (as well as clitics) are generally non-cohering in Persian. Therefore, the behavior of person agreement suffixes is not at all surprising.

(8) a. (ráft)$_{\omega}$-am "I went"
b. (xarí́d)$_{\omega}$-i "you bought"
c. (tarâshíd)$_{\omega}$-im "we sharpened"

Note that the stress pattern of the verbs discussed so far is consistent with the word stress rule proposed in the previous section. However, the examples in (9) show that the prefixes marking mood, namely the indicative marker *mi-* and the subjunctive marker *be-*, as well as the negative marker *na-/ne-*, attract main stress. This seems to pose a problem for the word-final stress rule. This very fact has led scholars to posit that Persian stress depends on lexical category.

(9) a. mí-xar-e "s/he buys"
*mi-xár-e
indic.-buy-3sg
b. bé-xar-am "that I buy"
*be-xár-am
sub.-buy-1sg
c. ná-xarid-∅ "s/he didn't buy"
*na-xárid-∅
neg.-bought-3sg

In the next section, I attempt to come to a unified account of Persian stress by making a distinction between word-level and phrase-level stress.

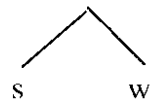
3 Proposal

In the previous section, we saw that the verbal prefixes pose a problem for our word-final stress rule. I suggest that making a distinction between word-level and phrase-level stress rules resolves the problem. Let us look at phrasal level stress in Persian. (10a) shows an example of a verb phrase (OV) and (10b) shows an example of a noun phrase (dem N).[5] Note that I have only marked the phrase-level stress for ease of illustration. Otherwise, each phonological word receives stress at the word level, according to the word stress rule in

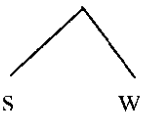
[5] Phonological phrase is abbreviated as PPhrase in all the examples throughout the paper.

section 1.[6]

(10) a.

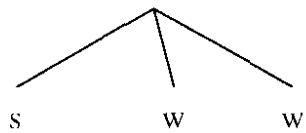


b.



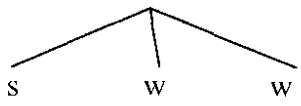
Here is how the stresses are assigned in the examples in (10). In (10a), each word takes its stress according to the word stress rule. Recall that the suffixes *–o* and *–am* are non-cohering. Thus, at the word-level, the second syllable in *ali* and the first syllable in *did-am* take stress. At the phrasal level, however, the stress falls on the leftmost phonological word (PWord). As a result, the main stress of the whole phrase falls on the second syllable of *ali*. The stress in example (10b) can be accounted for in the same manner. If more elements are added, the stress continues to go on the leftmost phonological word. This is shown in (11). Recall that only phrase-level stress is marked.

(11) a.



[6] This raises the question as to whether the other (word-level) stresses are audible as secondary stresses. The

b.



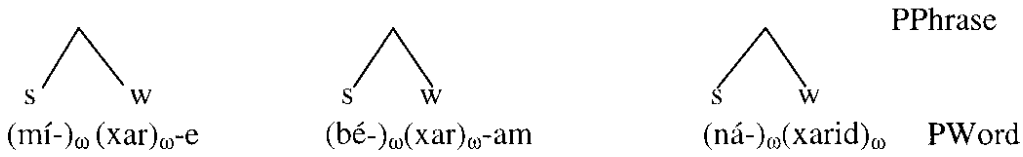
"these two books"

All the examples in (10) and (11) can be accounted for with the word-stress rule previously mentioned and the Phrasal stress rule given below.

Phrasal stress rule: The first phonological word (PWord) in the phonological phrase (PPhrase) takes stress (End Rule Left).

Now, let us return to the problematic verbal prefixes in (9). I propose the following as a solution to the problem: The verbal 'prefixes' enter the combination as phonological words, and the phrase-level stress rule puts the stress on the initial word in the phrase, here the prefixes (see (12) below). Recall that at the word level, the stress falls on the last syllable. Thus, the one-syllable prefixes as well as the stems are stressed.[7]

(12)



Similar to (11) above, if more preverbal elements are added, the stress continues to go on the leftmost phonological word.[8]

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status of secondary stress is quite unclear in Persian and is not dealt with in this paper.

[7] Note that according to native speakers' intuition and the orthography, the prefixes and the stem are part of the same word. With respect to the orthography, words are written separately in Persian. Note, however, that the negative marker *ne-/na-* and the subjunctive prefix *be-* attach to the verb. The indicative marker *mi-*, which used to be attached to the verb, is written separately by the younger generation. Meanwhile, in most word processors, whereas there is regular space between words, there is almost no space between this prefix and the verb. This distinction can hardly be made for handwriting.

[8] For the status of secondary stress in Persian, see note 6.

(13)

PPhrase

s w w w

$(dârám)_{\omega}$ $(ketâb)_{\omega}$ $(mi\text{-})_{\omega}(xun)_{\omega}$-am PWord

prog. book indic. read 1sg

"I am book-reading"

Note that compound verbs follow the same generalization, i.e. they enter the combination as phonological words and take phrasal stress. The non-verbal elements used in the compounds are sometimes simple words (like 11 above) and sometimes adverbial elements not used in isolation, as in (14) below.

(14) a. $(forú)_{\omega}$ $(kard)_{\omega}$ "s/he thrusted"
downward-did

b. $(pás)_{\omega}$ $(dâd)_{\omega}$-am "I gave back"
back-gave-1sg

Recall that in the case of nouns and adjectives, compounds were treated as one phonological word (6 above). The same was true for adjectives with derivational prefixes attached to them (3c above). The compound verbs in (14) seem to behave differently. Note, however, that in the case of nouns and adjectives, the two parts cannot be interrupted with other elements (inflectional material, etc.), whereas in the case of verbs, this is possible. This is shown in (15), where the material intervening is given in bold. This suggests that the former is a lexical process and the latter a syntactic one.

(15) a. pas-**esh** dâd-am "I gave it back"
back-it gave-1sg

b. pas **na**-dâd-am "I didn't give back"
back neg-gave-1sg

c. pas **xâham** dâd "I shall give back"
back fut. gave

To summarize, it has been argued in this section that verbal 'prefixes' are phonological words and that all lexical categories in Persian follow the same word-level and phrase-level stress rules. Note that the verbal prefixes are inflectional (syntactic) elements, so perhaps it is

not surprising that they function as separate words, given the patterning of the suffixes. The word-level and phrase-level stress rules along with the distinction between cohering and non-cohering suffixes have been able to account for the stress pattern of all Persian words discussed so far. In the following section, we will look at some cases that appear to pose problems to the proposed generalization.

4 Problematic cases

4.1 The Ezafe Construction

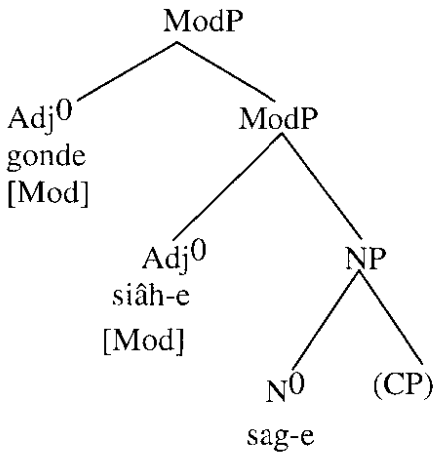
There is an apparent exception to the leftmost phrasal stress rule which occurs with respect to a well-known nominal construction in Persian, namely the Ezafe construction. Ezafe is indicated by an unstressed vowel *–e* which occurs on every noun (or adjective) that is followed by a(nother) modifier or possessor. An example is given in (16), which shows that the stress falls on the rightmost word. This seems to be a counterexample to the phrasal-stress rule which would predict main stress on the first word.

(16) sag-e siâh-e gondé
dog-Ez black-Ez big
"big black dog"

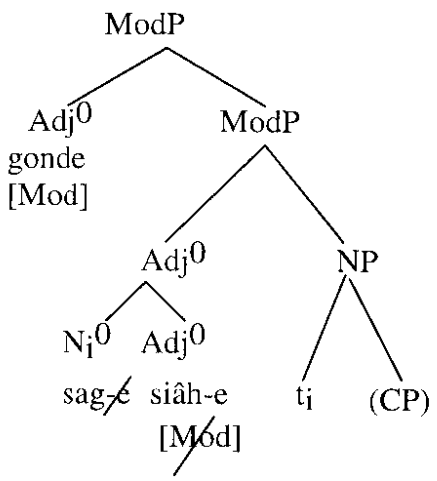
Before considering some tentative solutions to this problem, we need to have a closer look at the syntax of this construction. Kahnemuyipour (2000b, forthcoming) examines the syntactic structure associated with the Ezafe construction and argues that the merge position for the modifiers and possessors in the Ezafe construction is prenominal and that their final position is the result of syntactic movement. According to this analysis, the adjectives are located in the heads of functional projections above NP. These adjectives (or modifiers) bear the feature [Mod] (for modifier), and the functional projections are thus called Mod(difier) P(hrase)s. The noun, which also has the feature [Mod] (morphologically realized by the unstressed vowel -e, i.e. the Ezafe vowel), moves up, head-adjoins to the adjective and checking takes place. If there are more adjectives, and thus more functional projections, this process of head-adjunction and checking continues until all strong [Mod] features are checked. The derivation for the example in (16) is given in (17). (17a) shows the merge position. (17b) illustrates the movement and adjunction of the noun to the adjective above it. (17c) shows the movement and adjunction of the whole Noun-Adjective structure to the adjective above it. For ease of illustration, I have only shown the [Mod] feature on the adjectives. Note, however, that the Ezafe morphemes, too, bear a [Mod] feature. Thus, the checking which is shown to take place between the [Mod] feature and the Ezafe vowel, really

involves the [Mod] feature on the Ezafe.[9]

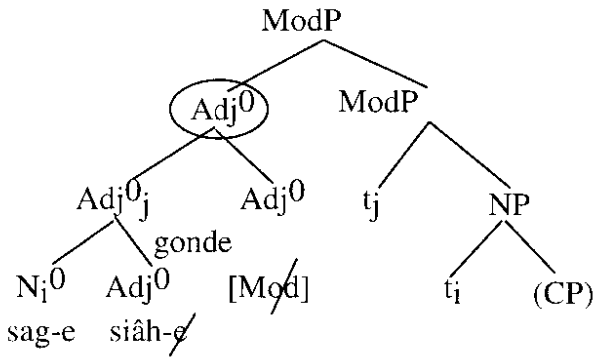
(17) a.



b.



c.



It can be seen in (17c) that the final structure of this phrase (circled in the tree diagram) is an X^0-level element, i.e. a word. Consequently, the observed stress pattern could be attributed to the word-level stress rule which puts the main stress on the final syllable of the word, here the whole Ezafe construction.

The syntactic analysis discussed above makes another account of the stress pattern possible. One could argue that the main stress might have actually been assigned at a point in the derivation when the final adjective (the word that surfaces as last in the phrase) was in fact in the leftmost position. This of course implies that stress assignment is not a rule that is applied in the path from spell-out to PF, but rather one that applies to intermediate derivations. Alternatively, one could maintain the conventional view that stress is a PF rule, but that rather than referring to the surface representation, it refers to an abstract stage in the derivation via some notion of trace. This proposal is reminiscent of Bresnan (1971), who argued that the Nuclear Stress Rule, which is responsible for English sentence stress, applies on each cycle after all syntactic rules have applied, thereby permitting the stress relations established in underlying structure to survive throughout the derivation. One of the

[9] For reasons of space, the motivation behind the analysis, as well as some interesting consequences, have been left out. For more details, refer to Kahnemuyipour (2000b, forthcoming).

consequences of her proposal is that the syntactic and phonological components are not discrete and some rules of prosody are included in the syntactic component. Note that recent developments in syntactic theory, namely the notion of 'derivation by phase' and multiple spell-out, seem to have paved the ground for the revival of such proposals. I leave the details of this and other possible solutions to the problem discussed in this section to future research.

4.1 The Negative Marker *ne-/na-*

There is one exception to the generalization that in the verb phrase, the stress always falls on the left-most element. In the case of the negative verb phrase, the stress remains on the negative marker *na-/ne-*, even if other words precede it. This can be seen in (18).

(18) a. ná-xarid-am "I didn't buy"

b. ketâb ná-xarid-am "I didn't buy books"

c. ketâb né-mi-xar-am "I don't (won't) buy books"

In (18b), for example, the main stress falls on the negative marker rather than the leftmost element *ketâb* "book". Note that omitting the negative marker would give the affirmative form "I bought books", in which case the stress would go on the first element *ketâb* "book", as expected. Following are some tentative solutions to this problem.

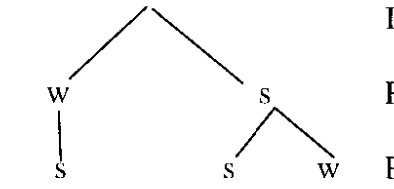
One way to deal with this problem is to suggest that the negative marker is lexically stressed and receives main stress in all contexts. This solution, however plausible at first glance, runs into a problem if we attempt to capture the fact that the negative marker in the negative form of the Persian long infinitives (what Chodzko referred to as nominal verbs) is not stressed. In these forms, the stress falls on the last syllable of the word, as predicted by the word-level stress rule; thus, for example, *na-budán* "not to be", *na-didán* "not to see", etc. In other words, the negative marker is not always stressed in Persian. Note that long infinitives in Persian behave just like nouns, suggesting that they are formed in the lexicon.[10]

A more plausible solution is to propose that the negative marker is a boundary for the phonological phrase and a higher phrase-level stress rule puts the stress on the negative marker.[11] Let us look at the stress rule for a higher phrasal level (i.e. intonational phrase, abbreviated as IPhrase in examples and diagrams). For this purpose, I look at a simple sentence consisting of a subject, an object, and a verb. This is shown in (19). Once again, for ease of illustration, I have only marked the main stress of the whole phrase.

[10] The fact that the negative marker is treated as a phonological word when attached to a finite verb but not to an infinitive has to do with a fundamental difference between the structure of finite verbs and long infinitives, or more generally between verb phrases and noun phrases in Persian. See section 5 for a preliminary attempt to illustrate the distinction.

[11] This solution was brought to my attention by Elan Dresher.

(19)



((hassan)$_{\omega}$)$_{\varphi}$((alí)$_{\omega}$-o (did)$_{\omega}$)$_{\varphi}$

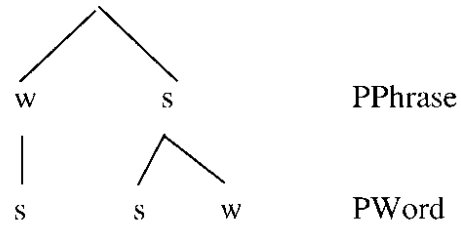
Hassan Ali-acc. saw

"Hassan saw Ali"

(19) shows that at a higher level, the intonational phrase, the stress remains on the verb phrase. In other words, at the level of the intonational phrase, the stress rule is "End Rule Right", which puts the stress on the rightmost phrase, in this example the verb phrase "saw Ali". Recall that within the phonological phrase, the leftmost word takes the main stress and within the phonological word, the last syllable attracts stress. As a result the final syllable in *ali* takes the main stress of the sentence.

Now, let us return to the problematic case, i.e. the negative marker. Assuming that the negative marker is a phrase boundary, the stress assignment can be accounted for in the same manner. This is illustrated in (20), where φ is used to mark phrase boundaries.

(20)



((ketâb)$_{\omega}$)$_{\varphi}$ ((ná)$_{\omega}$-(xarid)$_{\omega}$ -am)$_{\varphi}$

book neg. bought 1sg.

"I didn't buy books"

The stress assignment in (20) above can be explained as follows. At the intonational phrase level, the stress falls on the rightmost phonological phrase, i.e. *na-xarid-am* neg.-bought-1sg. This phonological phrase, in turn, consists of two phonological words, *na* and *xaridam*. According to the phonological phrase stress rule, the stress falls on the leftmost word, i.e. the negative marker. Note that the negative marker is monosyllabic and is thus stressed based on the word-level stress rule. As a result, the main stress of the whole phrase falls on the negative marker.

Let us see if there is a deeper explanation as to why the negative marker constitutes a phrase boundary. Kahnemuyipour (2000c) argues for a preverbal focus position in Persian which is the locus of contrastively focused elements as well as wh-phrases. The fact that

focused elements are often at the edge of a phrase has been proposed in the literature (e.g. Kanerva 1990). I would like to propose that the negative marker is placed in this preverbal focus position. Note the inherent contrastive sense of negation. Interestingly, the contrastively focused or wh-phrases share stress properties with the negative marker. Thus, the wh-phrase is stressed in (21a) and it blocks the phrase-level stress rule, End Rule Left, from applying to the element on its left in (21b). Note that if both the wh-phrase and the negative marker are present, the stress falls on the leftmost element, i.e. the wh-phrase (21c). I have also shown the syntactic structures for the examples, without worrying about details. FocP represents the Focus Phrase, which is home to the focussed elements.[12] Note that the negative marker (a clitic) starts off in the spec position of the FocP and later cliticizes to the verb.

(21) a. [$_{FocP}$ kojâ´ raft-i] Syntactic Structure

[$_{PPhrase}$ kojâ´ raft-i] Prosodic Structure

where went-2sg

"Where did you go?"

b. [$_{AgrOP}$ketâb-o [$_{FocP}$ kojâ´ gozâsht]] Syntactic Structure

[$_{IPhrase}$ketâb-o [$_{PPhrase}$ kojâ´ gozâsht]] Prosodic Structure

book-acc. where put

"Where did s/he put the book?"

c. [$_{FocP}$ kojâ´ [$_{FocP}$ na- raft-i]] Syntactic Structure

[$_{PPhrase}$ kojâ´ [$_{PPhrase}$ na- raft-i]] Prosodic Structure

where neg.-went-2sg

"Where did you not go?"

There is a difference, however, between wh-phrases and the negative marker. Whereas, the negative marker is a clitic and has to be attached to the verb, the wh-phrase is preferably placed at the left edge of the focus phrase (i.e. right after the subject); thus the contrast in (22).[13]

(22) a. ali chérâ ketâb mi-xun-e

Ali why book indic.-read-3sg

"Why does Ali read books (book-reads)?"

[12] Alternatively, the focussed elements could be put in the spec of vP. Whether multiple specs of vP or FocP are used is a technical detail irrelevant to the discussion here. For convenience' sake, I use FocP throughout.

[13] There are a handful of exceptions to the word-final stress rule, including the word for "why". The word-level stress is not at issue here.

b. ali ketâb né-mi-xun-e

Ali book neg.-indic.-read-3sg

"Ali doesn't read books."

Based on the proposal made in this section, the negative marker is initially placed in the same position as the wh-phrase, i.e. at the left edge of the focus phrase (or FocP). If we allow possibilities such as the one discussed for the Ezafe construction in the previous section, we can argue that the negative marker receives its stress according to the general phrasal stress rule when it is the leftmost element in the phrase and it later cliticizes to the verb, leading to the stress pattern in (22b).[14] There is, however, a fundamental difference between this proposal and the one made for the Ezafe construction. Cliticization is generally considered a PF rule. Thus, one can maintain the assumption that stress assignment is a PF rule, even though it applies prior to cliticization. The case of the negative marker does not pose a problem to the separation and the relative order of syntactic and phonological rules. The movement proposed for the noun in the Ezafe construction, on the other hand, was clearly a syntactic movement. Therefore, suggesting that stress assignment takes place prior to the movement necessarily questions the discreteness of the syntactic and the phonological components.

Further support for the proposal that cliticization occurs after stress assignment comes from examples like the one in (23). If we assume that stress assignment applies to the surface form in (23), and that the negative marker constitutes the edge of the phonological phrase, the stress on the wh-phrase would be difficult to account for. Recall that at the higher intonational phrase, the stress rule is End Rule Right and we would expect the main stress to fall on the negative marker, i.e. the leftmost phonological word in the rightmost Phonological phrase. Assuming that the negative marker starts off higher, and that the edge of the focus phrase is the edge of the phonological phrase, we would correctly predict that the stress would go on the wh-phrase, i.e. the leftmost phonological word of the rightmost Phonological phrase. The merge position of the wh-word and the negative marker are shown in (24). In (24), the leftmost element in the focus phrase is the wh-word which receives the final stress.

(23) ali chérâ ketâb-o na-xund

Ali why book-acc. neg.-read

"Why didn't Ali read the book?"

[14] This way, we might in fact be able to explain the mysterious behavior of the progressive construction in Persian in that it can never be negated (**dâram ne-mi-xor-am* prog. neg.-indic.-eat-1sg "I am not eating"). It might be the case that the progressive element blocks the cliticization of the negative marker. Why the progressive marker, and not other elements, blocks the cliticization remains to be explained. To negate progressive sentences, the indicative form is used. The result, however, is ambiguous between a habitual and a progressive reading (*ne-mi-xor-am* neg.-indic.-eat-1sg "I am not eating/ I do not eat").

(24) [$_{CP/IP}$ ali [$_{FocP}$ chérâ [$_{FocP}$ na ketâb-o xund]]] Syntactic Structure

[$_{IPhrase}$ ali [$_{PPhrase}$ chérâ [$_{PPhrase}$ na ketâb-o xund]]] Prosodic Structure

5 Conclusion

The word-level stress rule is "End Rule Right" in Persian. According to this rule, the final syllable in a word takes stress. Contrary to the long-held belief that Persian stress assignment is sensitive to lexical category, this rule applies to all verbs, as well as nouns and adjectives. It was shown in this paper that the superficially unusual stress pattern of "prefixed" verbs can be accounted for if we make a distinction between the grammatical word and the phonological word, and differentiate word- and phrase-level stress rules in Persian. The phrase-level stress rule is "End Rule Left" and puts the stress on the initial word in a phonological phrase. In the case of the prefixed verbs, the "prefixes" enter the combination as phonological words and the apparent initial stress is the result of the phrase-level stress rule. It was also shown that the same pattern persists if more words are added to the verb phrase. We have thus been able to provide a unified account of Persian stress which is independent of lexical categories.

Note that there is still a fundamental difference between verb phrases and noun phrases, but one that is connected to their syntactic structure. It is generally accepted that verb phrases (VPs or CPs) have a more complicated structure than noun phrases (NPs or DPs). Note that verb phrases constitute a sentence and can thus form an intonational phrase (IPhrase). Noun phrases, on the other hand, only consist of phonological phrases. Leaving aside the details and the problematic cases discussed above, the prosodic structure of Persian noun and verb phrases and their mapping to syntactic structure can be given as in (25).[15]

(25) a. Noun Phrase

Syntactic Struc.: [$_{DP}$ Dem(onstrative)- Numeral [$_{N}$ N(oun)–cohering sufs]- non-cohering sufs]

Prosodic Struc.: [$_{PPhrase}$ [$_{PWord}$ Dem(onstrative)]- [$_{PWord}$ Numeral] [$_{PWord}$ N(oun)-cohering sufs] - non-cohering sufs]

b. Verb Phrase

Syntactic Struc.: [$_{CP/IP}$ Subj [$_{FocP}$ Focus- …- Aspect- Mood [$_{V}$ Verb] - non-cohering sufs]]

Prosodic Struc.: [$_{IPhrase}$ Subj [$_{PPhrase}$ [$_{PWord}$ Focus]- …-[$_{PWord}$ Aspect]-[$_{PWord}$ Mood] [$_{PWord}$ Verb] - non-cohering sufs]]

Let us first look at the Noun Phrase in (25a). Starting from the right edge and moving to the left, the non-cohering suffixes are ignored. The left edge of the phonological word is determined by the noun. The word-level stress rule puts the stress on the final syllable of this

[15] The syntactic structures of Persian noun and verb phrases have been simplified for ease of illustration. The syntactic details are tentative.

phonological word.[16] All the morphosyntactic elements to the left of the noun constitute phonological words of their own. The edge of the phonological phrase is mapped onto the edge of the DP (the whole noun phrase). At the phrase level, the stress goes on the leftmost element. Noun phrases lack a higher prosodic level (i.e. intonational phrase). Thus the last syllable of the leftmost word in a noun phrase takes the primary stress of the whole phrase.

Let us now turn to the verb phrase in (25b). Starting from the right edge and moving to the left, the non-cohering suffixes are ignored. The left edge of the phonological word is determined by the tensed verb. All the morphosyntactic elements to the left of these heads constitute phonological words of their own. The edge of the phonological phrase is mapped onto the edge the FocP in verb phrases.[17] As a result, in the absence of focussed elements (including the negative marker), the verbal prefixes take the phrasal level stress. Otherwise, the focussed element receives primary stress. Finally, the edge of this intonational phrase is determined by the edge of the clause. However, since the intonational phrase level rule is 'End Rule Right', the final stress in unaffected.

To summarize, I have shown in this paper, that if the syntactic differences between noun phrases and verb phrases are taken into consideration, their apparently problematic stress pattern in Persian falls out rather straightforwardly.

[16] In the case of the Ezafe Construction, this is the final syllable of the last adjective. See section 4.1 for details.
[17] If there is no focussed element, the edge of the vP (or MoodP, AspP, etc. if we allow more functional projections) would determine the left edge of the phonological phrase.

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