る場合には、狭母音の無声化が優先され、狭母音の無声化が生じる環境と重ならない場合にのみカ行・タ行子音の有声化が起こることがわかる。

東北方言に見られる有声阻害音/b//z/の無声化の現象は主に中高年層を中心に観察されるため、次第に衰退していくことが予想される。しかし同時に、母音や子音の無声化はカ行・タ行子音の有声化より優先される現象であるため、狭母音の無声化に伴う有声阻害音/b//z/の無声化は、語彙は限られてはいるが完全に消失することはなく現在も観察されるのであろう。また、この現象は母音の無声化が起こる限りはそれに伴って起こる可能性があるため、この現象が現在どのくらいの語に認められるのか、またその環境にある語に常に見られる現象であるのか確認していきたい。

****

注

* 本稿は東京音韻論研究会(2013年9月14日)で行った口頭発表をもとにしたものである。貴重なコメントを下さった参加者の方々、また大変有意義なコメントを下さった二人の査読者の方に深く感謝申し上げたい。本研究は科学研究費補助金基盤研究(C)(課題番号 24520438)の助成を受けている。なお、全ての誤りや不備な点は筆者の責任によるものである。

1 本論文中の語例やその発音表記については、先行研究を参考に東北方言話者である筆者の内省を基に平山(2003)で確認を行った。

2 吉田(2002)は、東京方言話者に人工語を使って母音の無声化の実験を行い、東京方言でも狭母音の後続モーラが狭母音であるよりも広母音である方が無声化率が高いことが報告されている。

2「三つ葉」や「松葉」は複合語とも考えられるが、ここでは一語として扱う。

参照文献

橋本文子 2013「東北方言に見られる有声化と無声化の現象について」『音韻研究』16.11-18.

平山輝男 他 (編) 2003『青森県のことば』東京：明治書院.

飯豊毅一 1998『日本方言研究の課題』東京：国書刊行会.

井上史雄 1968「東北方言の子音体系」『言語研究』52.70-86. 東京：明治書院.

井上史雄 1980「言語の構造の変遷 ー東北方言音韻史を例としてー」『言語の構造』(講座言語第1巻) 257-290. 東京：大修館書店.

Kondo, Mariko. 2001. Vowel devoicing and syllable structure in Japanese. *Japanese/Korean Linguistics* 9.125-138.

宮島達夫 1961「母音の無声化はいつからあったか」『国語学』45:38-48.

大橋純一 2002『東北方言音声の研究』東京：おうふう.

齋藤孝滋 2000「岩手方言における母音無声化の変容」『国語学会平成12年度春季大会要旨集』150-157.

佐々木冠 2004「水海道方言の無声化と標準語の無声化：最適性理論による分析」『対照言語学の新展開』391-413. 東京：ひつじ書房.

Shibatani, Masayoshi. 1990. *The Languages of Japan.* Cambridge: Cambridge University Press.

Tsuchida, Ayako. 2001. Japanese vowel devoicing: cases of consecutive devoicing environments. *Journal of East Asian Linguistics* 10. 225-245. Netherlands: Kluwer Academic Publishers.

吉田夏也 2002「音声環境が母音の無声化に与える影響について」『国語学』53(3): 34-47.

The Ezafe Morpheme in Persian: An XP-external Clitic*

Ayat Hosseini
The University of Tokyo

ABSTRACT. This article investigates the prosodic structure of Ezafe constructions in Persian. Kahnemuyipour (2003) proposes that Ezafe constructions should be treated as phonological words. The present study based on phonetic observations and phonological evidence argues that each lexical word present in an Ezafe construction forms a phonological phrase, and the Ezafe morpheme tends to phrase with its preceding material to satisfy the constraint ONSET. This paper also suggests that the prosodic status of weak function words such as the Ezafe morpheme or some conjunctions that do not belong to their preceding or following syntactic maximal projections can be best explained by adopting a new constraint, namely MAP-XP.

Keywords: Ezafe, Persian, prosodic structure, XP-external clitics, syntax-phonology interface

1. Introduction

Persian is considered to be a "mixed-headed" SOV language in which both head-initial and head-final phrases can be observed (Zepter 2003). Verb phrases are always head-final, while in non-verbal categories, a head can have both preceding and following modifiers. When the head is followed by certain complements and modifiers, an unstressed morpheme /e/ appears between the head and its following material. The term used for this morpheme traditionally has been *Ezafe*, a loanword from Arabic literally meaning "adding." It generally appears between any two items that have some sort of connection (Ghomeshi 1996). Ezafe is semantically vacuous and is cliticized to its preceding lexical word as an affixal clitic (Hosseini 2012). Ezafe can appear in the following contexts:

(1) Between a noun and a modifier:
âdam-e bad
person-EZ bad
'bad person'

(2) Between a noun and a possessor:
pedar-e dâvud
father-EZ PR
'Davud's father'

(3) Between a noun and its complement:
xaridan-e nân
buying EZ bread
'buying bread'

(4) Between an adjective and its complement:
nârenji-ye rowšan
orange-EZ light
'light orange'

(5) Between a preposition and its complement:
nazdik-e bâzâr
near-EZ market
'near the market'

Ezafe is a feature of certain Western Iranian languages such as Persian and Kurdish (Samvelian 2007). It is also present in Urdu, a language highly influenced by Persian. Following sections review the existing suggestions on the prosodic structure of Ezafe constructions and make a new proposal by adopting Optimality Theory.

2. Previous studies

The syntax of Ezafe constructions has been a controversial matter in Persian linguistics and many proposals have been made to explain their structure. Ghomeshi (1996) following Samiian (1983) proposes that Ezafe constructions are formed by base-generated X^0 adjunction, and thus nouns and adjectives are not projected in these constructions. Consequently, all the elements in the Ezafe domain are X^0's, and the Ezafe construction cannot be considered as an XP. Kahnemuyipour (2000) in a minimalist approach adopts this idea and suggests that in an Ezafe construction, the adjectives (or modifiers) are located in the heads of functional projections above NP.

Persian is known to have only one stress at word level, which occurs on the rightmost syllable of lexical words. Kahnemuyipour (2003) claims that in an Ezafe construction, the final lexical word is prosodically more prominent than the others in the construction. In (6), an example from Kahnemuyipour (2003), the last syllable of the rightmost lexical word (*gonde*) is perceived more prominently. According to Kahnemuyipour (2003), since Ezafe constructions have rightmost prosodic prominence, and since they are syntactically X^0-level elements, the whole Ezafe construction should be treated as a single Phonological Word (PWord).

(6) *sag-e siyâh-e gonde* → *(sag-e siyâh-e gondé)*$_\omega$
dog-EZ black-EZ big
'big black dog'

Ito and Mester (2012:297) based on Kahnemuyipour's analysis suggest that the Ezafe construction in Persian can be regarded as a recursive PWord rather than a plain one.

3. Prosodic structure of Ezafe constructions

The account in Ghomeshi (1996) and Kahnemuyipour (2000) that takes the Ezafe construction to be a string of non-projected X^0's may be syntactically grounded, but is not compatible with the phonological facts of the language. Prosodic prominence in Persian is culminative at word level, i.e. there can be only one prominent syllable per PWord, and there are no secondary stresses at word level (Kahnemuyipour 2003). However, in case of Ezafe constructions, there are audible prominences on the last syllables of every lexical word present in the construction. For instance, in (6), there are audible prominences on the words *sag* and *siyâh* as well as the final word *gonde*. The claim that the final word in an Ezafe construction is perceived more prominently than the others is accurate, but the actual reason for this extra prominence is not what is claimed in the previous studies. As is discussed in Bolinger (1986), Silverman and Pierrehumbert (1990) and Ladd (1996), when there are several audible prominences (pitch accents) in an utterance, the final pitch accent is perceived more prominently. If we utter an Ezafe construction such as (6) in isolation, the Ezafe construction will form an utterance, and the final pitch accent of this utterance (the one on the word *gonde*) will be perceived more prominently. In fact, this claim is easily justifiable: if we put a phrase like (7) in a non-final position of a carrier sentence, the final word of the construction (*gonde*) will not be perceived more prominently anymore. This is shown in (7), in which the utterance-level prominence will be associated with the intransitive verb *mi-raqs-e* and all the three words in the Ezafe construction will have the same degree of prominence.

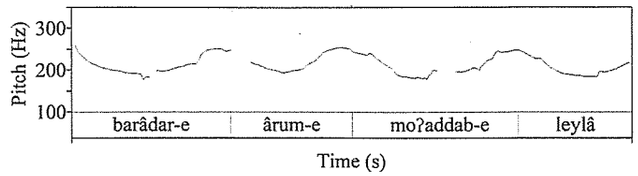
(7) *sàg-e siyâh-e gondè mí-raqs-e*
dog-EZ black-EZ big INDI-dance-be3SG
'The big black dog is dancing'

Since each lexical word present in an Ezafe construction has an audible prominence, the whole Ezafe construction cannot be regarded as a single PWord. Treating Ezafe constructions as recursive PWords is also not supported by this observation, because in that case, all PWords except the minimal one will have more than one audible prominence, which is not

acceptable for a PWord in Persian. The fact that each lexical word in an Ezafe construction has its own audible prominence is readily observable in the pitch contour of utterances of these constructions. This can be seen in figure (9), which shows the pitch contour of an utterance of the sentence in (8) uttered by a female native speaker. The Ezafe construction in (8) was embedded in a carrier sentence.

(8) *barâdar-e ârum-e mo?addab-e leylâ*
brother-EZ calm-EZ polite-EZ PR
'Leyla's calm and polite brother'

(9)



In sum, actual prosodic behavior of Ezafe constructions suggests that they cannot be regarded as either recursive or plain PWords.

We adopt the overall analysis of Persian prosodic structure in Kahnemuyipour (2003) which postulates two levels of audible prominence in Persian utterances. Phonological Phrase (PPhrase) stress is assigned to the leftmost PWord in it, and Intonational Phrase stress is assigned to the rightmost PPhrase in it. According to this account, although Persian does not have secondary stresses at word level, it allows secondary stresses at utterance level: all PPhrase heads are assigned with secondary stress, while the head of the final PPhrase is assigned with a primary stress. Thus, all the words that bear audible stress are necessarily PPhrase heads. If we look at Ezafe constructions closely, since every word in an Ezafe construction has an audible prominence, each of them must be a PPhrase head. In other words, each word in an Ezafe construction must be located on the leftmost edge of some PPhrase. Therefore, for an Ezafe construction containing three lexical words, there would be three possible prosodic structures: The structure shown in (10i) is a recursive structure in which each word present in the Ezafe construction is the leftmost PWord (the head) of a PPhrase. Another possibility is that each word forms a separate PPhrase as shown in (10ii), and the third structure is a combination of (10i) and (10ii), with one autonomous PPhrase on the left, and a recursive one on the right.

(10) i. *(ság-e (siyấh-e (gondé)*$_\varphi$ *)*$_\varphi$ *)*$_\varphi$
ii. *(ság-e)*$_\varphi$ *(siyấh-e)*$_\varphi$ *(gondé)*$_\varphi$
iii. *(ság-e)*$_\varphi$ *(siyấh-e (gondé)*$_\varphi$ *)*$_\varphi$

First of all, there seems to be no independent phonological or phonetic evidence in Persian supporting the recursive structure in (10i). More importantly, the assumption in Prosodic Phonology is that only syntactic maximal projections of lexical elements can be mapped onto PPhrases and functional projections are not legitimate to coincide with PPhrases (Selkirk 1995, 2011).

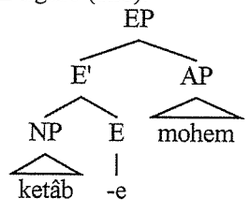
The reason why in some languages syntactic maximal phrases do not precisely correspond to PPhrases is that some kind of prosodic markedness constraints outrank interface constraints that map syntactic phrases onto PPhrases. In the languages that prosodic and syntactic structures coincide with each other, interface constraints are ranked over prosodic markedness constraints. Therefore, in order to have a recursive structure as in (10i) firstly, a corresponding recursive syntactic structure similar to the one shown in (11i) is necessary in which a lexical maximal projection (hereafter XP) is embedded in another XP. Secondly, the prosodic markedness constraints need to be ranked lower than syntax-prosody interface constraints.

(11) i. [XP *sag-e* [XP *siyâh-e* [XP *gonde*]]]
ii. [XP *sag-e*] [XP *siyâh-e*] [XP *gonde*]

The syntactic structure in (11i) is not acceptable for a Persian Ezafe construction, because there is no syntactic evidence suggesting that Ezafe constructions in Persian form recursive XPs similar to the structure shown in (11i). In fact, previous studies (e.g. Samiian 1983, Mahootian 1993, Ghomeshi 1996 and Kahnemuyipour 2000) provide evidence that Ezafe constructions cannot be regarded as XPs. Thus, a recursive PPhrase cannot emerge as a result of highly-ranked syntax-prosody interface constraints. This is also true about the structure in (10iii) in which the recursive PPhrase on the right cannot be formed by syntax-prosody mapping.

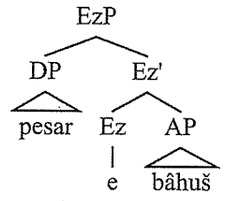
On the other hand, there are syntactic studies such as Mahootian (1993), Moinzadeh (2005), and Butt et al. (2008), which propose that Ezafe constructions are projections of the Ezafe morpheme as a functional head. In these accounts lexical words project as XPs and combine with the Ezafe morpheme following or preceding them. Mahootian (1993) for the first time suggests that the whole Ezafe construction is a phrase which she calls Ezafe Phrase (EP), with the Ezafe morpheme as its head. Her analysis of simple Ezafe constructions is shown in (12a). Moinzadeh (2005) in his minimalist approach applies Mahootian's analysis and takes Ezafe construction as a functional category (EzP) but suggests, based on syntactic evidence, that the head of the EzP is the morpheme /-e/ with its complement to the right. His analysis is shown in figure (12b).

(12) a.



ketâb-e *mohem*
book-EZ important
'important book'

b.



pesar-e *bâhuš*
boy-EZ intelligent
'intelligent boy'

The account proposed in this paper is compatible with the both analyses in (12a) and (12b). Please note that the Ezafe morpheme is not a part of its adjacent XPs in either (12a) or (12b). We suggest that the Ezafe morpheme phrases with its preceding element rather than the following one, for purely phonological reasons: If the Ezafe morpheme phrases as a proclitic, it will violate the constraint ONSET, and it is this constraint that militates against a procliticized Ezafe and prefers this morpheme to be an enclitic. Therefore, the general prosodic structure of an Ezafe construction would be as follows:

(13) *lex* EZ *lex* EZ … *lex* → (*lex*-EZ)$_\varphi$ (*lex*-EZ)$_\varphi$ … (*lex*)$_\varphi$

It should also be noted that the structure in (13) holds only for normal utterances with natural speech rate uttered in information-neutral out-of-the-blue contexts. Sometimes in Ezafe constructions, lexical elements associated with old/given information are produced without any audible prominence. Another issue with Ezafe constructions is that some constructions with high frequency of collocation have undergone a lexicalization process. Since lexicalization is a gradual and gradient process, one can find Ezafe constructions which are lexicalized more or less than the others. For example, the structure in (14i) is partially lexicalized, and can be produced either with only one prominent syllable at the right edge of the construction, or with two prominent syllables, one in each lexical word. The constructions in (14ii) and (14iii) on the other hand, are completely lexicalized. They form a single lexical entry and are always produced with a single prominent syllable at the right edge of the

construction. The example in (14iii) has even undergone further lexicalization and has lost its Ezafe morpheme. Hosseini (2014) provides a detailed discussion on the interaction of givenness and lexicalization with the prosodic structure of Ezafe constructions.

(14) i. *xalij-e fârs* — gulf-EZ Persia — 'Persian Gulf'
ii. *toxm-e morq* — egg-EZ hen — 'egg'
iii. *pedar zan* — father wife — 'father in law'

4. XP-external clitics: An OT account

As we saw, the Ezafe morpheme does not belong to its adjacent XPs, but tends to cliticize to its preceding material. This paper uses the term "XP-external clitic" for the Ezafe morpheme and other weak function words that are syntactically not a part of their preceding or following XPs but prosodically cliticize to one of them. The Ezafe morpheme is not the only XP-external clitic in Persian. Persian has both XP-external enclitics and XP-external proclitics. For instance, the conjunction *-o* 'and' is an XP-external enclitic very similar to the Ezafe morpheme, while the conjunctions *va* 'and' and *yâ* 'or' are XP-external proclitics. The goal of this section is to explain the prosodic structure of both types of XP-external clitics, including the Ezafe morpheme, within the framework of Optimality Theory. Since in the case of XP-external clitics the left and the right edges of XPs do not coincide with the left and the right edges of PPhrases, these structures will cause problems to any theory that suggests exact alignment or matching between XPs and PPhrases. In the next sections we will introduce two theories proposed in the framework of Prosodic Phonology and point out their problems in dealing with XP-external clitics.

4.1. Alignment

In her end-based theory of the syntax-prosody relation, Selkirk suggests that interface constraints demand alignment of the left or right edges of XPs with those of PPhrases (Selkirk 1986, 1995). This theory has been widely accepted and used in the past two decades. Kahnemuyipour (2003) adopts Selkirk's edge alignment theory and argues that in Persian XPs are left-aligned with PPhrases. One piece of evidence he uses in his discussion is the existence of the conjunction *-o* which is not a part of its preceding NP but always prosodizes as an enclitic with it. He argues that postulating right-alignment of XPs with PPhrases in Persian will lead to the ill-formed structure in (15):

(15) NP *o* NP → *(NP)$_\varphi$ (*o* NP)$_\varphi$

He does not deal with proclitic conjunctions of Persian such as *va* 'and' or *yâ* 'or', but if we take XP-external proclitics into consideration, left-alignment will also fail to derive the right prosodic structure:

(16) i. NP *va* NP → *(NP *va*)$_\varphi$ (NP)$_\varphi$
ii. NP *yâ* NP → *(NP *yâ*)$_\varphi$ (NP)$_\varphi$

Therefore, neither left-alignment nor right-alignment can explain the prosodic structure of XP-external clitics. The tableaux in (17) and (18) show that left-alignment derives the prosodic structure of the XP-external enclitics such as the conjunctions *-o* or the Ezafe morpheme correctly but fails to predict the structure of XP-external proclitics, while right-alignment will predict the structure of XP-external proclitics but fails to derive the structure of the XP-external enclitics. Please be noted that the two conjunctions have been used in these tableaux in order to emphasize their asymmetric behaviors and actually the conjunctions *-o* can be replaced by the Ezafe morpheme.

(17)

Input: [XP] & [XP]	ALIGN-XP, L	ALIGN-XP, R
☞ a. (NP *o*)$_\varphi$ (NP)$_\varphi$		*
💣 b. (NP *va*)$_\varphi$ (NP)$_\varphi$		*

(18)

Input: [XP] & [XP]	ALIGN-XP, R	ALIGN-XP, L
☞ a. (NP)$_\varphi$ (*va* NP)$_\varphi$		*
💣 b. (NP)$_\varphi$ (*o* NP)$_\varphi$		*

4.2. Match theory

Selkirk (2011) in her Match Theory of the syntax-prosodic constituency proposes that interface constraints call for a match between syntactic and prosodic constituents. She formulizes the tendency of XPs to match with PPhrases in a syntax-prosody interface constraint namely, MATCH-XP. MATCH-XP can be interpreted as simultaneous right and left alignments of XPs with PPhrases, and it makes no preferences for a single edge alignment. Therefore, it seems to be more appropriate for a language like Persian in which both XP-external proclitics and enclitics are found. The constraint PARSE-INTO-φ requires all segments to be parsed into PPhrase. Ranking PARSE-INTO-φ over MATCH-XP will make correct predictions for both enclitics (the tableau in (19)) and proclitic (the tableau in (20)). The fact that vowel-initial XP-external clitics phrase as enclitics rather than proclitics can easily be explained by postulating the constraint ONSET ranked lower than MATCH-XP

(19)

Input: [XP] *fnc* [XP]	PARSE-INTO-φ	MATCH-XP
☞ a. (XP *fnc*)$_\varphi$ (XP)$_\varphi$		*
b. (XP)$_\varphi$ *fnc* (XP)$_\varphi$	*!W	L

(20)

Input: [XP] *fnc* [XP]	PARSE-INTO-φ	MATCH-XP
☞ a. (XP)$_\varphi$ (*fnc* XP)$_\varphi$		*
b. (XP)$_\varphi$ *fnc* (XP)$_\varphi$	*!W	L
c. (XP *fnc* XP)$_\varphi$		**!W

However, if there are more than one XP-external function words, the ranking in (19) and (20) would not be able to derive the correct prosodic structure anymore. This is shown in the tableau in (21) for multiple XP-external enclitics, but the same problem exists with proclitics as well. The example in tableau (21) can be a complex Ezafe construction, similar to the one shown in (6), or three lexical words conjoined by the conjunction *-o*.

(21)

Input: [XP] *fnc* [XP] *fnc* [XP]	PARSE-INTO-φ	MATCH-XP
☞ a. (XP *fnc*)$_\varphi$ (XP *fnc*)$_\varphi$ (XP)$_\varphi$		**
b. (XP)$_\varphi$ *fnc* (XP)$_\varphi$ *fnc* (XP)$_\varphi$	*!W	L
c. (XP *fnc* XP *fnc* XP)$_\varphi$		***!W
💣 d. (XP *fnc* XP *fnc*)$_\varphi$ (XP)$_\varphi$		**

Candidate (21d) violates MATCH-XP as often as the winner does. In fact, if one assumes the OT constraints to be gradient, it may be possible to argue that candidate (21d) is less harmonic than candidate (21a), because the mismatch between the XPs and the PPhrases is

more severe in candidate (21d) comparing to that in candidate (21a). However, following McCarthy (2003), this study does not postulate gradient constraints due to their ad hoc nature, and also due to the wrong predictions they make.

By examining the candidates in tableau (21) closely, we realize that the most appropriate constraint that can render candidate (21a) and win over (21d) is a one which militates against a PPhrase containing two XPs. Indeed, a constraint with such functions has been proposed in the literature.

4.3. Map XP

Büring (2001) examines the syntactic and prosodic structures of focused double objects in German. In his Optimality Theory analysis, syntactic maximal phrases tend to coincide with Accent Domains (or AD, which is a term he uses for what we call PPhrases here). One of the AD formation constraints Büring (2001) proposes is the constraint called XP, which is defined in (22):

(22) XP: AD contains an XP. If XP and YP are within the same AD, one contains the other (where X and Y are lexical categories).

According to the definition in (22), two syntactic maximal projections XP and YP cannot be contained in a single PPhrase, unless one of them is embedded in the other in the syntactic representation. Therefore, the constraint XP will allow the prosodic phrasing in (23i), but will ban the prosodic structures in (23ii)-(23iv).

(23) i. [X [YP]]$_{XP}$ → (X YP)$_\varphi$ iii. [fnc XP YP]$_{FncP}$ → *(XP YP)$_\varphi$
ii. [XP YP]$_{XP}$ → *(XP YP)$_\varphi$ iv. XP YP → *(XP YP)$_\varphi$

In the present study, we adopt the constraint XP, but for more clarity, we will use the name 'MAP-XP' for it. MAP-XP is defined in (24):

(24) MAP-XP: Assign one violation mark for every PPhrase which contains two or more sister XPs.

The constraint MAP-XP requires each XP to be mapped onto some PPhrase, hence the name of the constraint. To compare Selkirk's MATCH-XP with MAP-XP defined in (24), let us return to the tableau in (21). If we replace the constraint MATCH-XP in this tableau with MAP-XP, candidate (21a) will win over all the other candidates. This is shown in the tableau in (25).

(25)

Input: [XP] *fnc* [XP] *fnc* [XP]	PARSE-INTO-φ	MAP-XP
☞ a. (XP *fnc*)$_\varphi$ (XP *fnc*)$_\varphi$ (XP)$_\varphi$		
b. (XP)$_\varphi$ *fnc* (XP)$_\varphi$ *fnc* (XP)$_\varphi$	*!W	L
c. (XP *fnc* XP *fnc* XP)$_\varphi$		*!W
d. (XP *fnc* XP *fnc*)$_\varphi$ (XP)$_\varphi$		*!W

In fact, the constraint MAP-XP is undominated in Persian, because no PPhrase contains more than one XP in these prosodic structures.

As mentioned previously, the constraint ONSET ranked lower than MAP-XP requires vowel-initial XP-external weak function words to prosodize as enclitics. The detailed ranking of ONSET with other constraints that determine the internal structure of PPhrases and PWords is beyond the scope of this paper and cannot be discussed here due to space limitations. Interested readers are urged to refer to Hosseini (2014), which provides a comprehensive discussion on this matter and also explains the prosodic structure of Ezafe constructions and other syntactic phrases such as VPs and DPs uniformly by adopting the constraint MAP-XP.

5. Conclusion

This paper explored the prosodic structure of Ezafe constructions in Persian. It was argued that since in Persian utterances, audible prominences are phonological phrase heads, and since each lexical word in an Ezafe construction has an audible prominence, each lexical word should be considered as an autonomous phonological phrase. The Ezafe morpheme is not a part of its preceding or following syntactic XP, but prosodically phrases with its previous material to avoid onsetless words. It was also discussed that the prosodic structure of Ezafe constructions as well as other similar XP-external function words such as conjunctions can be explained by adopting the constraint MAP-XP which bans sister XPs in one phonological phrase.

****

Notes

* This research was supported by the NINJAL collaborative research project 'Phonological characteristics of the Japanese lexicon.'

References

Bolinger, Dwight M. 1986. *Intonation and its parts: Melody in spoken English*. Stanford, CA: Stanford University Press.

Büring, Daneil. 2001. Let's phrase it! – Focus, word order, and prosodic phrasing in German double object constructions. *Competition in Syntax*, ed. by Gereon Müller and Wolfgang Sternefeld, 69-106. Berlin & New York: Mouton de Gruyter.

Butt, Miriam, Tina Bögel and Sebastian Sulger. 2008. Urdu Ezafe and the morphology-syntax interface. *Proceedings of LFG08*.129-149. Stanford, CA: CSLI Publications.

Ghomeshi, Jila. 1996. Non-projecting nouns and the Ezafe: construction in Persian. *Natural Language & Linguistic Theory* 15(4).729-788.

Hosseini, Ayat. 2012. The prosodization of function words in Persian. *Orientalia Suecana* 61.126-137.

Hosseini, Ayat. 2014. *The phonetics and phonology of prosodic prominence in Persian*. Tokyo: The University of Tokyo dissertation.

Ito, Junko, and Armin Mester. 2012. Recursive Prosodic Phrasing in Japanese. *Prosody Matters: Essays in Honor of Elisabeth Selkirk*, ed. by Toni Borowsky, Shigeto Kawahara, Takahito Shinya and Mariko Sugahara, 280-303. London: Equinox Publishers.

Kahnemuyipour, Arsalan. 2000. Persian Ezafe construction revisited: Evidence for modifier phrase. *Proceedings of the Annual Conference of the Canadian Linguistic Association*, 173-185.

Kahnemuyipour, Arsalan. 2003. Syntactic categories and Persian stress. *Natural Language & Linguistic Theory* 21(2).333-379.

Ladd, Robert D. 1996. *Intonational phonology*. Cambridge: Cambridge University Press.

Mahootian, Shahrzad. 1993. *A null theory of codeswitching*. Evanston, IL: Northwestern University dissertation.

McCarthy, John J. (2003). OT Constraints are Categorical. *Phonology* 20.75-138.

Moinzadeh, Ahmad. 2005. A new approach to the Ezafe phrase in Persian. *Cahiers Linguistiques d'Ottawa* 33(1).35-61.

Samiian, Vida. 1983. *Structure of phrasal categories in Persian: An X-bar analysis*. Los Angeles: University of California Los Angeles dissertation.

Samvelian, Pollet. 2007. A (phrasal) affix analysis of the Persian Ezafe. *Journal of Linguistics* 43. 605-645.

Selkirk, Elisabeth O. 1986. On derived domains in sentence phonology. *Phonology Yearbook* 3.371-405.

Selkirk, Elisabeth O. 1995. The prosodic structure of function words. *Papers in Optimality Theory: University of Massachusetts Occasional Papers* 18, ed. by Jill Beckman, Laura Dickey and Suzanne Urbanczyk, 439-469. Amherst, MA: GLSA.

Selkirk, Elisabeth O. 2011. The Syntax-Phonology Interface. *The Handbook of Phonological Theory* (2nd ed.), ed. by John Goldsmith, Jason Riggle, and Alan Yu, 435-484. West Sussex, UK: Wiley-Blackwell Publishing.

Silverman, Kim and Janet Pierrehumbert. 1990. The timing of prenuclear high accents in English. *Papers in Laboratory Phonology* I, ed. by John Kingston and Marry Beckman, 71-106. Cambridge: Cambridge University Press.

Zepter, Alexandra. 2003. *Phrase structure directionality: Having a few choices*. New Brunswick, NJ: The State University of New Jersey dissertation.

Suprasegmental Nativization of English Loanwords into Fijian*

Gakuji Kumagai
Tokyo Metropolitan University

ABSTRACT. This paper deals with two patterns of suprasegmental nativization of English loanwords into Fijian. The first pattern is that the vowel on the antepenultimate syllable is shortened and that the stress inherited from English disappears (e.g. *bì:kéni* 'béacon' → *bikéni*) (Schütz 1985, 1990). The second pattern is that the vowel shortening on the final syllable occurs and that the stress is placed on the penultimate syllable containing an erstwhile epenthetic vowel (e.g. *dòketá:* 'dóctor' → *dokéta*) (based on Gatty 2009). The aim of this paper is to demonstrate that the suprasegmental nativization can be explained by demoting two adaptation-specific constraints, both of which are highly ranked in the constraint ranking of Fijian loanword adaptation. This paper will also show that the OT model presented here can predict whether loanwords will be nativized or not.

Keywords: Fijian, English loanwords, suprasegmental adaptation, nativization, Optimality Theory

1. Introduction

There has been an increasing awareness of loanword adaptation in terms of Optimality Theory (OT). A number of various models in the earlier literature (e.g. Davidson & Noyer 1996 for Spanish loanwords into Huave) incorporate adaptation-specific faithfulness constraints that require output to be identical to input as a source word of a given donor language, and provide an account of nativization of loanwords by reranking the faithfulness constraints low.

The aim of this paper is to demonstrate that the picture similar to the case of Huave is found in suprasegmental nativization of Fijian, which borrows words from English. We focus here on two nativized patterns in trisyllabic loanwords. The first pattern is that the vowel on the antepenultimate syllable is shortened and that the stress inherited from English disappears (e.g. *bì:kéni* 'béacon' → *bikéni*). The second pattern is that the vowel shortening on the final syllable occurs and that the stress is placed on the penultimate syllable which contains an erstwhile epenthetic vowel (e.g. *dòketá:* 'dóctor' → *dokéta*). I will show that the two nativized patterns are explained by demoting two adaptation-specific faithfulness constraints, both of which are highly ranked in the constraint ranking of loanword adaptation in Fijian.

The organization of this paper is as follows. Section 2 introduces five constraints on Fijian phonology. Section 3 explores several characteristics of suprasegmental adaptation in Fijian, and then discusses suprasegmental nativization with which this paper deals. Section 4 provides an OT analysis of the suprasegmental adaptation and the nativization. Section 5 concludes this paper.

2. Preliminaries

In this section, I will introduce five constraints on Fijian phonology. As exemplified in (1), bimoraic feet are formed from the right edge of the word, except that degenerate feet would be formed (Hayes 1995). The primary stress is placed on the penultimate mora (Blevins 1994). In OT terms, TROCHEE (TROC) and FOOT-BINARITY (mora) (FTBIN (μ)) are highly ranked and never violated in Fijian. Also, Fijian involves ALIGNMENT-FOOT-RIGHT (Align-Ft-Right), which will be explained in Section 4.

(1) Native words of Fijian (Foot structures are denoted by parentheses)

(líma)	'five'	(bú:)	'grandmother'	ma(káwa)	'old'
tu(rága)	'men'	se(gái)	'no'	(màca)(wá:)	'worthless'
ma(ráma)	'women'	(bè:)(bé:)	'moth'	(mà:)(cáwa)	'week'