

[REVIEW]

Prosody Matters: Essays in Honor of Elisabeth Selkirk

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1. Introduction

This edited volume is a festschrift in honor of Prof. Elisabeth Selkirk and contains sixteen papers, all written by researchers who have worked with or were taught by this influential scholar. All papers either investigate prosodic structure directly, or try to provide solutions to various linguistic problems by addressing prosodic structure, hence the title of the book ‘Prosody Matters.’ The book is organized in four sections: 1. ‘Mora and syllable’; 2. ‘Foot and Prosodic Word’; 3. ‘Phrase and above’ and 4. ‘Prosodic hierarchy and semantic interpretation.’ Six papers are experimental studies, while the others deal with theoretical issues. In the next section of this review, we will provide a short outline for each paper. In Sections 3 and 4 we will make brief remarks on two of the papers published in this volume, and the final section will contain general evaluations and concluding remarks.

2. Outlines of the Papers

The first paper in this volume is written by Karim Bensoukas and Abdelaziz Boudlal and aims at explaining the behavior of schwa in Amazigh and Arabic, two genetically unrelated languages, both spoken in

* I have benefited from the discussions with Shin-ichi Tanaka, Clemens Poppe, Yuki Asahi, Daiki Hashimoto and other members of the phonology seminar at The University of Tokyo.

Morocco. They adopt Optimality Theory to show the prosodic similarities between these two languages with respect to the behavior of schwa. They argue that schwa is an epenthetic vowel in both languages which is inserted in order to satisfy syllable well-formedness. They also show that schwa never appears in open syllables, and that schwa syllables are always light. Based on these observations they claim that in these two languages, schwa is not associated with a mora unless it is followed by a consonant.

The second paper by Joe Pater is related to the first one in that it also deals with syllable structure in a Berber language, namely Imdlawn Tashlhiyt. In this article, Pater introduces Serial Harmonic Grammar, a new version of Optimality Theory. It can be described as a combination of Harmonic Grammar which uses numerically weighted constraints, and Harmonic Serialism in which the candidates are evaluated at each stage of the derivational process. Pater proposes that in Imdlawn Tashlhiyt, syllables with more sonorant nuclei are formed before syllables with less sonorant nuclei.

The third paper is written by Jennifer Smith and is the final paper in the first section. The article is based on Smith's previous research and proposes a head-based definition of the constraint *ONSET*. This constraint can be satisfied both by structural (true) onsets and by rimal onglides. Smith then uses this constraint to explain the syllable position of Korean glides which show both consonant-like and vowel-like behaviors.

Section 2 contains four papers on foot and the Prosodic Word and begins with an article by Hasan Basri, Ellen Broselow and Daniel Finer on the structure of the Prosodic Word in Makassar, a language spoken in Indonesia. They argue that different phonological patterns in this language such as stress and velar-glottal alternation can be best explained with reference to Prosodic Word structure. They propose that true suffixes in Makassar are prosodified as a part of the same Prosodic Word as their host, while suffixal clitics are free clitics attached directly to the Phonological Phrase nodes.

The next paper in this section by Scott Myers is an experimental study of utterance-final devoicing in English and reports on one production and two perception experiments. The production experiment reveals that there is a significant utterance-final devoicing effect in English. The perception tests show that the utterance-final devoicing of fricatives can in fact affect the identification of voicing categories. The author suggests that this can be interpreted as phonologization of a phonetic devoicing process. However, he argues that it does not seem appropriate to generalize these findings to consonants other than fricatives and categories lower than utterance.

The third paper in this section deals with voicing assimilation in Rus-

sian, and is written by Jaye Padgett. Based on the recursive model put forth in Ito and Mester (2009), Padgett proposes that in Russian, proclitics phrase with their hosts as affixal clitics in a recursive manner, while enclitics incorporate into the Phonological Phrase as free clitics. He then suggests that voicing assimilation can apply within Prosodic Words and across right boundaries of Prosodic Words, but is blocked by the left boundaries of maximal Prosodic Words.

Mariko Sugahara's paper on Prosodic Word prominence in English is the last article in this section. In this instrumental study, Sugahara examines the duration of primary and secondary stressed syllables in accented and unaccented contexts. She finds significant duration increase in the both contexts. However, the increase is observed not only in primary stressed syllables, but also in their following unstressed syllables. Sugahara concludes that the domain of Prosodic Word lengthening is the entire head-foot of a Prosodic Word.

Section 3 includes papers on Phonological Phrases and above, and begins with an article by Sam Hellmuth on prosodic phrasing in Egyptian Arabic. In this paper Hellmuth argues that although there seems to be no phonological cue to the edge of prosodic phrases in Egyptian Arabic, pre-boundary lengthening and peak height manipulation reflecting down-step serve as phonetic cues to mark the edges of prosodic categories. She claims that all these phonetic cues mark the Major Phrase in Arabic and concludes that there is only one level of phrasing between the Intonational Phrase and the Prosodic Word, which is consistent with the analysis provided in the next paper of this volume by Ito and Mester.

In their paper Junko Ito and Armin Mester, following their previous studies, claim that only three categories, namely Prosodic Word, Phonological Phrase and Intonational Phrase, are necessary above foot. They argue that Major Phrase and Minor Phrase proposed for Japanese in the literature are reducible to recursions of a single category, namely the Prosodic Phrase. By allowing recursion for all interface categories, they make a distinction between 'domain' and 'category.' Some prosodic domains can be regarded as larger recursive structures of a single interface category.

Shigeto Kawahara in his experimental study explores the Intonational Phrase by examining nominal parentheticals in Japanese. He compares the left edge of these constructions with that of nouns and VPs and finds that in parentheticals, the left edge is associated with several distinct properties such as pitch reset, rising of L and a pause. He also finds phonetic differences between noun edges and VP edges. He concludes that there

are qualitative differences between the Intonational Phrase and the Major Phrase.

The next paper in this section is written by John McCarthy and addresses prosodic structure and phonology-morphology interface issues in the context of utterance-final (pausal) words in Classical Arabic. In this language, utterance-final words must end in a heavy syllable, but different strategies such as apocope, epenthesis and metathesis are adopted to achieve this result. In order to explain these strategies, McCarthy adopts the Harmonic Serialism version of Optimality Theory in which morpheme realization interacts freely with phonological constraints.

This section ends with Hisao Tokizaki's paper in which he aims to explain the prosodic differences between Shanghai and other Chinese dialects by adopting bare mapping from syntax to phonology developed in his previous works. He argues that the edge parameter developed by Selkirk (1986) and others is not necessary for prosodic phrasing if one assumes the bare mapping of syntactic structures onto phonology. The next section of this review article will make further remarks on Tokizaki's approach.

The final section of the book contains four papers which deal with the relation between prosodic hierarchy and semantic interpretation and especially the prosodic structure of focused elements. The first article in this section is by Katy Carlson, Lyn Frazier and Charles Clifton Jr, and investigates the role of Intonational Phrase boundary tones in the interpretation of ambiguous VP ellipses in English (examples such as: *John said that Fred went to Europe, and Mary did too*). They hypothesize that boundary tones are mainly responsible for disambiguating such ellipsis sentences. However, the results of the five experiments they conduct reveal that pitch accent location has a more crucial role in interpreting these constructions.

The article by Caroline Féry is an information-structural approach to the prosodization of the German particles *selbst* 'self,' *wieder* 'again,' and *auch* 'also.' These particles change their meanings according to their accent, but this cannot be attributed to lexical accent. Féry argues that these particles vary their information-structural properties: when they are not focused themselves, but are associated with focused elements, they are accentless. However when they are focused, they are accented at Intonational Phrase level.

In her contribution Masako Hirotsu investigates the prosodic phrasing of wh-questions in Tokyo Japanese. She attempts to address the question of whether prosody is used to determine the scope of ambiguous wh-questions in Tokyo Japanese or not. By conducting two experiments she finds that wh-scope is not uniquely mapped to any specific prosody and thus is not

disambiguated by prosodic phrasing; rather multiple factors related to syntax-phonology and semantics-phonology interface are decisive in their interpretation.

The final paper in this volume is written by Hubert Truckenbrodt and deals with phrasal stress in German by adopting two different accounts namely Phase (Kratzer and Selkirk (2007) based on Kahnemuyipour (2004)) and Stress-XP (Truckenbrodt (1995)). The former assigns phrase stress within the highest syntactic phrase within the spellout domain, and the latter requires each lexical XP to contain a beat of phrasal stress.

It is not possible to comment in more detail on every article due to considerations of space, thus only two papers will be chosen and discussed in the two following sections.

3. Bare Mapping and Prosodic Markedness

In this section we will make a few remarks on the approach adopted in Tokizaki's paper. Tokizaki's paper has been selected to discuss in this review, because the model he proposes in this article and in his earlier studies makes certain predictions about prosodic phrasing of human speech which are different from those made by hierarchical models proposed by Selkirk and other scholars. Since the book under review is in honor of Elisabeth Selkirk, this section will compare Tokizaki's approach with hers, and examine the predictions made by the two approaches. Rather than addressing Tokizaki's analysis of Chinese dialects, these remarks will concern the general interface theory proposed by Tokizaki in this paper.

In this article, Tokizaki challenges the single-edge-alignment put forth in Selkirk (1986), based on the model he developed for the syntax-prosody interface in Tokizaki (1999, 2006, 2008) and his subsequent work. He suggests a bare mapping from syntactic structure onto phonological representation which results in a linear prosodic structure. He claims that various phonological phenomena including the difference in phrasing between Shanghai and other Chinese dialects can be explained by this model, without referring to the edge parameter. His approach includes two rules, namely a mapping rule and a boundary deletion rule which apply in sequence. These two rules are given in (1) and (2).

- (1) Mapping rule: interpret boundaries of syntactic constituents [...] as prosodic boundaries /.../.
- (2) Boundary deletion rule: delete n boundaries between words. (n : anatural number)

The example in (3) demonstrates the bare phrase structure of a Japanese sentence (3a), the results of applying the mapping rule (3b) and the results of applying the boundary deletion rule (3c).¹

- (3) a. [S [NP [NP Ao'yama-no] [N Yama'guchi-ga]]
 Aoyama-from Yamaguchi-Nom
 [VP [NP ani'yome-o] [V yonda]]
 sister-in-law-Acc called
 'Mr. Yamaguchi from Aoyama called her sister in law'
 b. /// Ao'yama-no // Yama'guchi-ga /// ani'yome-o // yonda ///
 c. / Ao'yama-no Yama'guchi-ga // ani'yome-o yonda / (n=2)

The number of deleted boundaries (n) determines the size of prosodic units; the bigger the value of n , the less the number of boundaries and the bigger the constituents in size. According to Tokizaki's paper in this volume, the prosodic difference between Shanghai and other Chinese dialects is explainable in terms of prosodic domain size (the number of n).

Tokizaki challenges single edge alignment and the edge parameter proposed by Selkirk in the early stages of Prosodic Phonology. However, we note that in her more recent work, Selkirk (2011) points out the problems with single-edge alignment and alternatively proposes Match Theory of syntactic-prosodic constituency correspondence, according to which each syntactic phrase tends to match with a corresponding prosodic phrases. Matching in this theory can be interpreted as the simultaneous alignment of both right and left edges. Therefore, it is in essence very similar to bare mapping proposed by Tokizaki. One major difference between the two theories is that Tokizaki proposes bare mapping as a rule, while Selkirk (2011) introduces Matching as a violable constraint.

In his previous works, Tokizaki (2011) takes the phonological structure to be a linear sequence of elements with different strengths of juncture. However, a structure composed of constituents that are separated by different degrees of junctures seems to be more similar to a hierarchical structure than to a linear one. For instance, in the example in (3b), if we accept that the juncture between *Yama'guchi-ga* and *ani'yome-o* is stronger than the one between *ani'yome-o* and *yonda*, we are implying that the first two are in the same phrase at a higher level of hierarchy, while the next two are in the same phrase at a comparatively lower level.

¹ The locations of prosodic boundaries in Japanese are identifiable by phonetic criteria such as downstep, pitch reset, metrical boost and Boundary Pitch Movements (BPMs).

More importantly, Tokizaki's bare mapping model seems to understate the role of phonological markedness in prosodic phrasing. The fact that syntactic constituents tend to map onto prosodic constituents is accepted in almost any theory that deals with syntax-phonology interface. However, in Prosodic Phonology it is assumed that highly marked prosodic constituents do not surface, even if they correspond to syntactic constituents. For example, as is argued in detail in Selkirk (2000), while syntactic phrases can virtually be of any length, there are certain restrictions on the size of prosodic phrases. Prosodic constituents avoid being too long or too short. Selkirk (2000) in her Optimality Theory analysis, formalizes this tendency as a prosodic markedness constraint namely BINARYMAP which is defined in (4).

- (4) BINARYMAP (BINMAP): A Major Phrase consists of just two Minor Phrases.

The interaction between BINMAP and syntax-prosody interface constraints can determine the prosodic structure of sentences. Let us see how the issue of size restrictions can affect the predictions of Tokizaki's bare mapping model. The example in (5) adopted from Selkirk (2000) shows the bare syntactic structure of an English sentence containing a verb phrase and two complements.

- (5) [she [lóaned] [her róllerblades]_{NP} [to Róbin]_{PP}]_{VP}

As shown in Beckman and Pierrehumbert (1986), the hallmark of the Major Phrase (MaP) in English is the presence of the phrasal accent (H or L) which is located at the right edge of the phrase. The presence or absence of this tone can be used to diagnose the presence of MaP boundaries. Consequently, the results of this diagnoses show that there are two different possible prosodic phrasings for the sentence in (5). These two variations are shown in (6) and (7).

- (6) (she lóaned her róllerblades to Róbin)_{MaP}
 (7) (she lóaned her róllerblades)_{MaP} (to Róbin)_{MaP}

As far as the utterance does not contain a VP-Internal focus, it will either be parsed as a single MaP as shown in (6), or as two MaPs with a MaP boundary between the first complement and the preposition phrase as can be seen in (7). The important issue here is that in a neutral utterance of (5), at a normal speech rate and with no focus on the verb, the MaP boundary marking tone will never appear at the right edge of the verb *lóaned*. In other words, *she lóaned* cannot be phrased as an autonomous MaP, which makes the structures in (8) and (9) unattested.

(8) *(she lóaned)_{MaP} (her rólleblades to Róbin)_{MaP}

(9) *(she lóaned)_{MaP} (her rólleblades)_{MaP} (to Róbin)_{MaP}

Now let us turn to the prediction of Tokizaki's mapping rule which is shown in (10). If the bare mapping is applied, there would be the same degree of juncture before and after *her rólleblades*, which predicts the same type of prosodic boundary in these positions.

(10) /she /lóaned // her rólleblades // to Róbin //

This is in contrast with the attested prosodic structures shown in (6) and (7). Application of the boundary deletion rule ($n=1$) will lead to the structure in (11). As can be seen, the resulting utterance will consist of three constituents which again is not compatible with the attested structures.

(11) she lóaned / her rólleblades / to Róbin / ($n=1$)

Bare mapping is simply unable to exclusively derive the actually existing forms in (6) and (7). As Selkirk (2000) suggests, the reason why structures like (8) and (9) never surface is that they comprise too many tiny prosodic constituents which is at odds with the tendency of the language to ban undersized prosodic constituents.

Selkirk (2000) explains the variation in the phrasing here, by ranking the constraint BINMAP below ALIGN (XP, R; MaP, R) and WRAP (XP; MaP). The two constraints ALIGN and WRAP are defined in (12) and (13).

(12) ALIGN (XP, R; MaP, R): The right edge of any XP in syntactic structure must be aligned with the right edge of a MaP in prosodic structure.

(13) WRAP (XP; MaP): The elements of an input morpho-syntactic constituent of type XP must be contained within a prosodic constituent of type MaP in output representation.

Selkirk's OT analysis is shown in the tableau in (14) below. With respect to ALIGN and WRAP, candidates (14a), (14b) and (14c) are on a par in that each of them makes one violation of one of the constraints, but the first two candidates satisfy the prosodic markedness constraint BINMAP better than the third one.

Please note that the constraint ALIGN-R-XP is violated where there is no Major Phrase boundary at the right edge of an XP. By this definition, the candidates in (14a) and (14d) each make a single violation, because the NP *her rollerblades* is not right-aligned with a MaP, while in candidates (14b) and (14c) all three XPs (the NP, the PP and the big VP) are right-aligned with some MaP.

According to the definition of WRAP-XP by Truckenbrodt (1995), the constraint WRAP-XP requires all the XPs to be wrapped by some Phonological

Phrase (Major Phrase). In other words, WRAP-XP is violated iff an XP is not properly wrapped by a Major Phrase (for example when an XP is split into more than one Major Phrase). Therefore, the candidate (14a) does not exhibit any violations because all three XPs (the NP, the PP and the big VP) are properly wrapped by a MaP, while in candidates (14b–d) the big VP is split into more than one MaP, and is not properly wrapped.

(14)

[she [lóaned] [her róllerblades] _{NP} [to Róbin] _{PP}] _{VP}	WRAP-XP	ALIGN-R-XP	BINMaP
☞ a. (she lóaned her róllerblades to Róbin) _{MaP}		*	*
☞ b. (she lóaned her róllerblades) _{MaP} (to Róbin) _{MaP}	*		*
c. (she lóaned) _{MaP} (her róllerblades) _{MaP} (to Róbin) _{MaP}	*		**!*
d. (she lóaned) _{MaP} (her róllerblades to Róbin) _{MaP}	*	*!	*

The most crucial point in the theory proposed by Tokizaki is that it predicts prosodic structures to be very similar to syntactic structures. In other words, this approach tends to lean merely on syntax and does not take prosodic markedness into consideration. However, it has been shown that marked prosodic structures are generally avoided, regardless of their syntactic structure. Most importantly, syntactic phrases potentially can be of any size, while there are always restrictions on the size of prosodic phrases. Tokizaki's approach, as we have shown, does not take markedness issues such as size restrictions into consideration.

4. Prosodic Word or Phonological Phrase?

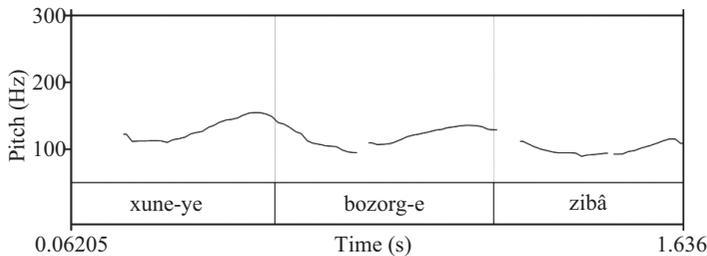
At the end of this review, we are going to make a comment on a suggestion by Ito and Mester at the end of their paper (p. 297) about the prosodic structure of Ezafe constructions in Persian. This comment will not concern the general proposals made in this paper that prosodic structure is best explainable by assuming three potentially recursive categories above Foot. Rather, it will try to show that the correspondence between recursive syntactic structures and recursive prosodic structures is limited to lexical categories and is not applicable to maximal projections of functional categories as asserted in works such as Selkirk (1995) and formalized in Truckenbrodt (1995) as the Lexical Category Condition (LCC).

In Persian, when the head of a syntactic phrase is followed by certain complements and modifiers, an unstressed morpheme /-e/ appears between the head and its following material. This semantically vacuous morpheme is called Ezafe and has a high frequency of occurrence in the language. The example in (15) shows an Ezafe construction in which the Ezafe morpheme is shown by EZ.

- (15) *xune-ye bozorg-e zibâ*
 house-EZ big-EZ beautiful
 ‘big beautiful house’

Ito and Mester, based on a claim in Kahnemuyipour (2004), suggest that Ezafe constructions are mapped onto recursive Phonological Words. However, a close investigation of these constructions reveals that each lexical word present in an Ezafe construction has an audible prominence on its final syllable. This is observable in (16) which depicts the pitch contour of an utterance of the Ezafe construction in (15).

(16)



Hosseini (2014) deals with the prosodic structure of Ezafe constructions and argues that since stress is culminative in Persian at the Prosodic Word level, it is not possible to take Ezafe constructions to be plain or recursive Prosodic Words. He also shows that since Ezafe constructions are considered to be projections of the functional head Ezafe, these constructions cannot be regarded as recursive Phonological Phrases either, and the only possible structure for them is a plain structure in which each lexical word is mapped onto a Phonological Phrase as shown in (17). The Ezafe morphemes then phrase with their preceding Phonological Phrases to prevent onsetless syllables.

- (17) $(xune-ye)_\phi (bozorg-e)_\phi (zibâ)_\phi$

Ezafe constructions are assumed to be projections of the functional head Ezafe. Although they have recursive syntactic structures, their prosodic structure is flat. This is readily predictable by the proposal in Selkirk

(1995) and Truckenbrodt (1995) according to which only maximal projections of lexical categories are legitimate candidates to be mapped onto prosodic phrases.

5. Conclusion

In this review, I have tried to provide a balanced introduction to the contents of the sixteen papers present in *Prosody Matters*. Since it was not possible to go through the technical details of all of the papers due to space limitations, only two papers were chosen and discussed in detail. I argued that the approach taken in Tokizaki's paper underestimates the role of prosodic markedness, and can lead to inaccurate predictions. I also argued that the recursive Prosodic Word structure proposed in Ito and Mester's paper may account for a wide range of data, but contrary to the claim made in their paper, the Ezafe constructions in Persian cannot be considered as recursive Prosodic Words.

The main strength of the book under review lies in the fact that it takes both phonological and phonetic aspects of the prosodic phenomena into consideration. Given the large diversity of the topics of collected papers, the current volume is likely to appeal to a wide range of scholars working on both the phonology and phonetics of prosodic phenomena. I strongly recommend this volume to anyone interested in prosodic studies.

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