The Role for Prosodic Markedness Constraints in Phonological Phrase Formation in Two Pitch Accent Languages

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This paper reviews some well-known facts from TJ and NBB which show that prosodic markedness constraints have a role to play in determining the phonological domain structure for the tonal and intonational phenomena of sentences in these languages. Facts like these are highly relevant to ongoing debates about the nature of the syntax-phonology interface: the very existence of a role for such constraints tells us that the domain structure for phonological and phonetic phenomena cannot be identified with syntactic constituency itself (contra Arregi 2002, 2006, Wagner 2005, 2010, Pak 2008 and others), but must be an independent prosodic structure. In the view presented here, and elsewhere, the prosodic structure of the surface phonological representation of a sentence is the output of an interaction between markedness constraints on prosodic structure and correspondence constraints which govern the relation between prosodic structure and the syntactic constituent structure that is the output of the syntactic component of the grammar.

1. Accent and φ-formation in Tokyo Japanese & Northern Bizkaian Basque:

Tokyo Japanese and Northern Bizkaian Basque share many prosodic properties:

- Both have a distinction between lexically accented and unaccented words.
- In both, lexically accented words show a single culminative pitch accent in the surface representation: $_{\omega}($ … H*L … $)_{\omega}$
- In both, the distribution of a word-initial LH rise diagnoses the presence of the left edge of a phonological phrase (φ): $_{\varphi}$(LH- ….. $)_{\varphi}$
- In both, within the same φ, there is significant downstepping of pitch after a lexically accented word.
- In both, the φ-organization of a syntactic phrase is a function, in part, of phonological factors like accent status, leading to cases of nonisomorphism between syntactic and phonological constituency, see e.g. Selkirk & Tateishi 1988, Kubozono 1993, Jun & Elordieta 1997, Elordieta 1998, Gussenhoven 2004
- Yet there are differences in φ-organization in identical syntactic environments in the two languages, showing a role for language-particular ranking of prosodic markedness constraints with respect to constraints on the correspondence between syntactic and prosodic constituency.

2. φ-structure *within* DPs in Tokyo Japanese & Northern Bizkaian Basque

- **Tokyo Japanese DPs: Genitive XP + head noun**

(1)

	Syntactic constituency	Prosodic constituency
a.	i. $_{XP}[_{XP}[\ A\ ]_{XP}$-*no* A $]_{XP}$	ii. $_{\varphi}(\ _{\varphi}(A)_{\varphi}\ !_{\varphi}(A)_{\varphi}\ )_{\varphi}$
	$_{DP}[_{DP}$[Yamáguchi-no]$_{DP}$ aníyome-ga]$_{DP}$ Yamaguchi-gen sister-in-law-nom 'Yamaguchi's sister-in-law'	LH- H*L ! LH-H*L $_{\varphi}(_{\varphi}$(Yamáguchi-no)$_{\varphi}$!$_{\varphi}$(aníyome-ga)$_{\varphi})_{\varphi}$
b.	i. $_{XP}[_{XP}[\ U\ ]_{XP}$-*no* U $]_{XP}$	ii. $_{\varphi}(\ \boldsymbol{U}\ U\ )_{\varphi}$
	$_{DP}[_{DP}$[Inayama-no]$_{DP}$ yuujin-ga]$_{DP}$ Inamaya-gen friend-nom 'Inamaya's friend'	LH- L- $_{\varphi}$(Inayama-no yuujin-ga)$_{\varphi}$
c.	i. $_{XP}[_{XP}[\ U\ ]_{XP}$-*no* A $]_{XP}$	ii. $_{\varphi}(\ \boldsymbol{U}\ A\ )_{\varphi}$
	$_{DP}[_{DP}$[yamai-no]$_{DP}$ yamádera-ga]$_{DP}$ mountain village-gen mountain temple-nom 'mountain village of the mountain temple'	LH- H*L $_{\varphi}$(yamai-no yamádera-ga)$_{\varphi}$
d.	i. $_{XP}[_{XP}[\ A\ ]_{XP}$-*no* U $]_{XP}$	ii. $_{\varphi}(\ _{\varphi}(A)_{\varphi}\ !_{\varphi}(U)_{\varphi}\ )_{\varphi}$
	$_{DP}[_{DP}$[Yamámori-no]$_{DP}$ yamagoya-ga]$_{DP}$ Yamamori-gen mountain hut-nom 'Yamamori's mountain hut'	LH- H*L LH- L- $_{\varphi}(_{\varphi}$(Yamámori-no)$_{\varphi}$!$_{\varphi}$(yamagoya-ga)$_{\varphi})_{\varphi}$

[There is some variability in the casea of UU, UA and AU, which in slower or more careful speech may show separate phrasing for unaccented words as well. Facts from Kubozono 1993, Selkirk & Tateishi 1988.]

(2) Recursion and phonological phrase types (Ito & Mester (2006, 2007, 2009, to appear):

Def. φ_{min} (minimal φ) = φ not dominating any other φ.
[φ_{min} supplants the notion of minor phrase/accentual phrase]

Def. φ_{max} (maximal φ) = φ not dominated by any other φ.
[φ_{max} supplants the notion of major phrase/intermediate phrase]

- **Northern Bizkaian Basque DPs : Genitive XP + head noun**

(3)

	Syntactic constituency	Prosodic constituency
a.	i. $_{XP}[_{XP}[\ A\ ]_{XP}$-*(e)n* A $]_{XP}$	ii. $_{\varphi}(\ _{\varphi}(A)_{\varphi}\ !_{\varphi}$***(A)***$_{\varphi}\ )_{\varphi}$
	$_{DP}[_{DP}$[Amáyen]$_{DP}$ liburúa]$_{DP}$ Amaya-gen book-abs 'Amaya's book'	LH- H*L ! LH- H*L $_{\varphi}(_{\varphi}$(Amáyen)$_{\varphi}$!$_{\varphi}$(liburúa)$_{\varphi})_{\varphi}$
b.	i. $_{XP}[_{XP}[\ U\ ]_{XP}$-*(e)n* U $]_{XP}$	ii. $_{\varphi}(\ \boldsymbol{U}\ U\ )_{\varphi}$
	$_{DP}[_{DP}$[lagunen]$_{DP}$ dirua]$_{DP}$ friend-gen money-abs 'the friend's money'	LH- L- $_{\varphi}$(lagunen dirua)$_{\varphi}$
c.	i. $_{XP}[_{XP}[\ U\ ]_{XP}$-*(e)n* A $]_{XP}$	ii. $_{\varphi}(\ \boldsymbol{U}\ A\ )_{\varphi}$
	$_{DP}[_{DP}$[lagunen]$_{DP}$ amúma]$_{DP}$ friend-gen grandmother-abs 'the friend's grandmother'	LH- H*L $_{\varphi}$(lagunen amúma)$_{\varphi}$
d.	i. $_{XP}[_{XP}[\ A\ ]_{XP}$-*(e)n* U $]_{XP}$	ii. $_{\varphi}(\ _{\varphi}(A)_{\varphi}$! U $)_{\varphi}$
	$_{DP}[_{DP}$[Amáyen]$_{DP}$ dirua]$_{DP}$ Amaya-gen money-abs 'Amaya's money'	LH- H*L L- $_{\varphi}(_{\varphi}$(Amáyen)$_{\varphi}$! dirua $)_{\varphi}$

[Facts from Elordieta 1997, 1998, 2007a, Jun & Elordieta 1997]

- Note: The facts for Northern Bizkaian Basque in (6) represent the "ideal", sentence-medial case. In NBB, there is never any surface U in final position in the isolation form or before the verb, which is sentence-final (cf. (7-bii) and (7-dii)). This is ascribed to the presence of "sentence accent" on words in that position by Hualde, Elordieta & Elordieta 1993; Elordieta 1997, 2007a; Arregi 2002. This issue isn't taken up here.

?How to account for the instances of nonisomorphism-- namely the lack of syntactic-prosodic constituency correspondence—internal to DPs in (1) and (3)?

- **Hypothesis:**

(4) Assume a Match Phrase (Selkirk 2006, 2009, to appear) theory of the correspondence between syntactic and prosodic constituency :

a. Match (XP, φ): An XP in syntactic representation corresponds to a prosodic constituent in phonological representation, call it φ ('phonological phrase').

b. Match (φ, XP): A φ ('phonological phrase') in phonological representation corresponds to an XP in syntactic representation

- Prediction of Match theory: A strong tendency in any language for the prosodic constituency to mirror, i.e. be isomorphic to, syntactic constituency, including its recursivity, e.g.

$$_{XP}[_{XP}[\ \text{word}\ ]_{XP}\ \text{word}\ ]_{XP} \quad \rightarrow \quad {}_{\varphi}(\ {}_{\varphi}(\ \text{word}\ )_{\varphi}\ \text{word}\ )_{\varphi}$$

(5) The high ranking of very familiar types of prosodic markedness constraints impose the Match-violating, nonisomorphic, φ-structures seen DP-internally in *both* Tokyo Japanese and Northern Bizkaian Basque:

a. Fact: $_{XP}[_{XP}[\ A\ ]_{XP}\ A\ ]_{XP}$ → $_{\varphi}(\ {}_{\varphi}(A)_{\varphi}\ {}_{\varphi}\boldsymbol{(A)_{\varphi}}\ )_{\varphi}$

Relevant prosodic markedness constraint (cf. Yip 2002, Hellmuth 2007):

"**If-accented-then-Hd-of-φ_{Min}**"

Constraint ranking at the S-P interface:

"If-accented-then-Hd-of-φ_{Min}" >> Match (φ, XP)

[Given this assumption that an accent must be associated with the prosodic head of a φ_{Min}, which has the consequence that any accent-bearing word must head a distinct φ_{Min}, we provide an account for the generalization that there is at most one A-word in a φ_{Min}.

b. Facts: $_{XP}[_{XP}[\ U\ ]_{XP}$-*no* $U\ ]_{XP}$ → $_{\varphi}(\ \boldsymbol{U}\ U\ )_{\varphi}$

$_{XP}[_{XP}[\ U\ ]_{XP}$-*no* $A\ ]_{XP}$ → $_{\varphi}(\ \boldsymbol{U}\ A\ )_{\varphi}$

Relevant prosodic markedness constraint (Inkelas and Zec 1995, Selkirk 2000):

BinMin (φ, ω): A φ must contain at least two prosodic words (ω)

Constraint ranking at the S-P interface:

BinMin (φ, ω) >> Match (XP, φ)

c. Facts: In T. Japanese: $_{XP}[_{XP}[\ A\ ]_{XP}$-*no* U $]_{XP}$ ➔ $_{\varphi}(_{\varphi}(\ A\ )_{\varphi}\ _{\boldsymbol{\varphi}}\boldsymbol{(\ U\ )_{\varphi}}\ )_{\varphi}$

In N.B. Basque : $_{XP}[_{XP}[\ A\ ]_{XP}$-*(e)n* U $]_{XP}$ ➔ $_{\varphi}(_{\varphi}(\ A\ )_{\varphi}$ U $)_{\varphi}$

Relevant markedness constraint (McCarthy & Prince 1993, many others):

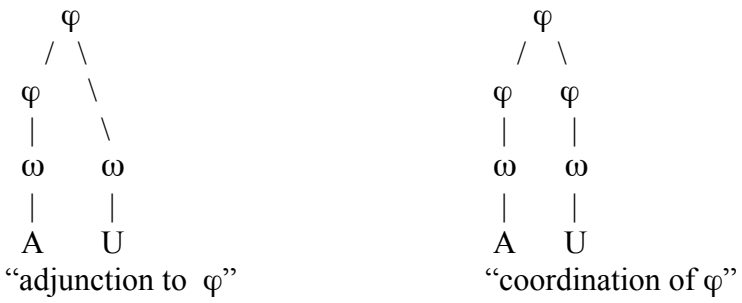
Align R (φ_{Min}-Hd, φ_{Min}-Edge)

The head (= main stress) of φ_{Min} is R-most in φ_{Min}.

[Given our assumption that an accent is associated with the prosodic head of a φ_{Min}, the Head-Edge alignment constraint accounts for the generalization that an A-word is always R-most in a φ_{Min}.]

- **Analysis of the difference between TJ and NBB in φ-structure of [[A] U]:**

(6) Northern Bizkaian Basque Tokyo Japanese



"adjunction to φ" "coordination of φ"

In both cases, the accented word is R-aligned with a φ-edge. The difference between them lies in the phrasal status of the following unaccented word.

- The coordination structure, where U is a φ, incurs a violation of Match (φ, XP); the adjunction structure does not.

- The adjunction structure violates a prosodic markedness constraint disfavoring adjunction—*Adjunction (Myrberg 2010); the coordination structure does not.

  *ADJUNCTION (Myrberg 2010)
  Sister nodes in prosodic structure are instantiations of the same prosodic category.

- As we can see, the S-P correspondence constraint Match (φ, XP) conflicts with the prosodic markedness constraint *Adjunction, setting up a tension which a language must resolve by one or the other ranking of the two constraints.

?How to account for the difference between T. Japanese and NB. Basque in the prosodic parsing of the [[A] U] sequence in (1d) and (3d) depicted in (6)?

- **Hypothesis:**

(7) NB. Basque: Match (φ, XP) >> *Adjunction

T. Japanese: *Adjunction >> Match (φ, XP)

- **Interim summary: The high ranking of familiar types of prosodic markedness constraints can be given responsibility for Match-violating nonisomorphisms observed inside DP structures in Tokyo Japanese and Northern Bizkaian Basque**

(8) Examples from the different types of constraint families

i. "If-accented-then-Hd-of-φ_{min}" = A type of constraint on the tone/prosodic Head (stress) relation (see e.g. Yip 2002, Hellmuth 2007)

ii. BinMin (φ, ω) (Inkelas and Zec 1995, Selkirk 2000) = A type of constraint on the binarity of prosodic structure (many well-known references)

iii. *Adjunction (Myrberg 2010) = A type of constraint on domination relations in prosodic structure (Selkirk 1996)

3. Sequences of DPs in the sentence in NB. Basque

Elordieta 2006, 2007b observes that Northern Bizkaian Basque prosodic structure may show a further sort of nonisomorphic grouping in which a sentence-initial XP and the XP that follows are grouped into a single maximal phonological phrase (φ_{max}).

(9) $_{clause}[\ _{XP}[\ldots]_{XP}\ _{XP}[\ldots]_{XP}\ \ldots.\ ]_{clause}$ ➔ $_{IP}|\ _{\varphi max}(\ _{\varphi}(\ldots)_{\varphi}\ _{\varphi}(\ldots)_{\varphi}\ )_{\varphi max}\ \ldots..\ |_{IP}$

Note: IP stands for 'intonational phrase', produced by Match Clause (Selkirk 2009)

(10) **Evidence for nonisomorphic φ-structure: pitch realization of sequences of XPs containing A-words in Northern Bizkaian Basque sentences (Elordieta op.cit.)**

a. $[A]_{XP}\ [A]_{XP}$ verb = $_{IP}|\ _{\varphi max}(\ (A)_{\varphi}\ !(A)_{\varphi}\ )_{\varphi max}$ verb $|_{IP}$
b. $[[A]\ A]_{XP}$ verb = $_{IP}|\ _{\varphi max}(\ (A)_{\varphi}\ !(A)_{\varphi}\ )_{\varphi max}$ verb $|_{IP}$

c. $[A]_{XP}\ [A]_{XP}\ [A]_{XP}$ verb = $_{IP}|\ ((A)\ !(A))_{\varphi max}\ (A)_{\varphi max}$ verb $|_{IP}$
d. $[[A]\ A]_{XP}\ [A]_{XP}$ verb = $_{IP}|\ ((A)\ !(A))_{\varphi max}\ (A)_{\varphi max}$ verb $|_{IP}$
e. $[[[A]\ A]\ A]_{XP}$ verb = $_{IP}|\ (((A)\ !(A))\ !(A))_{\varphi max}$ verb $|_{IP}$

(i) The pattern of downstep in (10a), with its sequence of two single-A-word XPs is the same as that seen internal to a single φ_{max} containing two A-words as in (10b) [and (6a)].

a. $[A]_{XP}$ $[A]_{XP}$ verb = $_{IP}|\ _{\varphi max}(\ (A)_{\varphi}\ !(A)_{\varphi}\ )_{\varphi max}$ verb $|_{IP}$

$_{DP}$[Amayári]$_{DP}$ $_{DP}$[liburúa]$_{DP}$ emon dotzo
Amaya-dat book-abs give aux
'(S)he has given the book to Amaya'

LH- H*L ! LH- H*L
$_{\varphi max}(_{\varphi}$(Amayári) $!_{\varphi}$(liburúa))$_{\varphi max}$ emon dotzo

b. [[A] A]$_{XP}$ verb = $_{IP}|\ _{\varphi max}(\ (A)_{\varphi}\ !(A)_{\varphi}\ )_{\varphi max}$ verb $|_{IP}$

$_{DP}$[$_{DP}$[Amáyen]$_{DP}$ liburúa]$_{DP}$ emon dotzo
Amaya-gen book-abs give aux
'(S)he has given him/her Amaya's book'

LH- H*L ! LH- H*L
$_{\varphi max}(_{\varphi}$(Amáyen) $!_{\varphi}$(liburúa))$_{\varphi max}$ emon dotzo

(ii) The pattern of downstep in (10c), with its sequence of three XPs each consisting of a single A-word is the same as that seen in (10d), where a clause-initial XP containing two A-words precedes a single A-word XP. In both, the first two words are grouped together into a maximal φ, and the third A-word is located in a separate φ_{max}. In both (10c) and (10d), downstep is found between the first two A-words of the sentence, but downstep between the second and the third A-words is blocked, as predicted by the status of the third A-word as a separate $\varphi_{max.}$

c. $[A]_{XP}$ $[A]_{XP}$ $[A]_{XP}$ verb = $_{IP}|\ ((A)\ !(A))_{\varphi max}\ (A)_{\varphi max}$ verb $|_{IP}$

$_{DP}$[Amayári]$_{DP}$ $_{PP}$[ewenían]$_{PP}$ $_{DP}$[liburúa]$_{DP}$ emon eutzan
Amaya-dat Thursday-on book-abs give aux
'(S)he gave the book to Amaya on Thursday'

LH- H*L ! LH- H*L LH- H*L
$_{\varphi max}(_{\varphi}$(Amayári) $!_{\varphi}$(ewenían))$_{\varphi max}$ $_{\varphi max}$(liburúa)$_{\varphi max}$ emon eutzan

d. [[A] A]$_{XP}$ $[A]_{XP}$ verb = $_{IP}|\ ((A)\ !(A))_{\varphi max}\ (A)_{\varphi max}$ verb $|_{IP}$

$_{DP}$[$_{DP}$[Amáyen]$_{DP}$ amumári]$_{DP}$ $_{DP}$[liburúa]$_{DP}$ emon dotzo
Amaya-gen grandmother-dat book-abs give aux
'(S)he has given the book to Amaya's grandmother'

LH- H*L ! LH- H*L LH- H*L
$_{\varphi max}(_{\varphi}$(Amáyen) $!_{\varphi}$(amumári))$_{\varphi max}$ $_{\varphi max}$(liburúa)$_{\varphi max}$ emon dotzo

(iii) By contrast to (10cd), in (10e), which consists of a single sentence-initial XP containing three A-words in a nested genitive construction within DP, there is downstep between the first and the second and between the second and the third words.

e. $[[[A]\ A]\ A]_{XP}$ verb = $_{IP}|\ (((A)\ !(A))\ !(A))_{\varphi max}$ verb $|_{IP}$

$_{DP}[_{DP}[_{DP}$[Amáyen]$_{DP}$ amúmen]$_{DP}$ liburúa]$_{DP}$ emon dotzo
Amaya-gen grandmother-dat book-abs give aux
'(S)he has given him/her Amaya's grandmother's book'

L- H*L ! L- H*L ! LH- H*L
$_{\varphi max}(_{\varphi}(_{\varphi}$(Amáyen) $!_{\varphi}$(amúmen)) $!_{\varphi}$(liburúa))$_{\varphi max}$ emon dotzo

- The facts above from Northern Bizkaian Basque give evidence for the existence of a φ_{max} which groups the contents of a clause-initial XP consisting of a single A-word together with the contents of the following XP in the sentence. This nonisomorphic φ_{max} structure incurs a violation of the correspondence constraint Match (φ, XP), since there is no syntactic XP which corresponds to this $\varphi_{max.}$

(11) **Analysis**

a. **IP-Initial φ-Binarity**[1]

A φ_{max} at the left edge of IP must be at least binary at the φ_{min} level.

b. In Northern Bizkaian Basque:

IP-Initial φ-Binarity >> Match (φ, XP)

(12) **Evidence for φ_{min}-level-binarity of IP-initial φ_{max}: pitch realization of XP sequences beginning with clause-initial $_{XP}[[U]\ A]_{XP}$ in Northern Bizkaian Basque (Elordieta op.cit.)**

a. $[[U]\ A]_{XP}$ $[A]_{XP}$ verb = $_{IP}|\ _{\varphi max}(\ (U\ A)_{\varphi min}\ !(A)_{\varphi min}\ )_{\varphi max}$ verb $|_{IP}$
b. $[[[U]\ A]\ A]_{XP}$ verb = $_{IP}|\ _{\varphi max}(\ (U\ A)_{\varphi min}\ !(A)_{\varphi min}\ )_{\varphi max}$ verb $|_{IP}$

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[1] As Elordieta op. cit. points out, IP-Initial φ-Binarity is a positional markedness constraint in the sense of Smith 2002, one calling for prosodic augmentation at an initial edge. φ_{min}-level binarity is required only for a φ_{max} that is not positioned at the left edge of IP. (This is seen in (10c,d) above).

(i) Reminder from (1c/3c): [[U] A] ➔ $_{\varphi}$(U A)$_{\varphi}$

[Evidence: Absence of φ-initial LH rise at left edge of the A following U]

(ii) IP-Initial φ-Binarity, formulated as in (11), therefore predicts that a sentence-initial two-word XP [UA] will be grouped within the same φ_{max} as the following XP, and this is true, as shown by the downstepping of the A-word from the second XP in sequence.

a. [[U] A]$_{XP}$ [A]$_{XP}$ verb = $_{IP}|$ $_{\varphi max}$((U A)$_{\varphi}$!(A)$_{\varphi}$)$_{\varphi max}$ verb $|_{IP}$

$_{DP}$[$_{DP}$[lagunen]$_{DP}$ amumári]$_{DP}$ $_{DP}$[liburúa]$_{DP}$ emon dotzat
friend-gen grandmother-dat book-abs give aux
'I have given the book to the friend's grandmother'

LH- H*L ! LH- H*L
$_{\varphi max}$($_{\varphi}$(lagunen amumári) !$_{\varphi}$(liburúa))$_{\varphi max}$ emon dotzat

(iii) Patterns of post-accent downstep in (12a) are the same as those seen internal to a single XP, as in (12b), where the sentence-initial XP contains the entire sequence [UAA], as reported in Elordieta op cit.

b. [[[U] A] A]$_{XP}$ verb = $_{IP}|$ $_{\varphi max}$((U A)$_{\varphi}$!(A)$_{\varphi}$)$_{\varphi max}$ verb $|_{IP}$

$_{DP}$[$_{DP}$[$_{DP}$[lagunen]$_{DP}$ amúmen]$_{DP}$ liburúa]$_{DP}$ emon dotzat
friend-gen grandmother-dat book-abs give aux
'I have given him/her the friend's grandmother's book'

LH- H*L ! LH- H*L
$_{\varphi max}$($_{\varphi}$(lagunen amúmen) !$_{\varphi}$(liburúa))$_{\varphi max}$ emon dotzat

(13) **Interim Summary:**

- The significant nonisomorphism between syntactic XP structure and prosodic φ structure observed with clause-initial *sequences of XP* in Northern Bizkaian Basque sentences can be understood as the consequence of a language-particular constraint ranking:

  IP-Initial φ-Binarity >> Match(φ, XP)

- The absence of comparable nonisomorphism in clause-initial sequences of XP in Tokyo Japanese (see Selkirk and Tateishi 1991) must be explained as a consequence of the opposite constraint ranking:

  Match(φ, XP) >> IP-Initial φ-Binarity

4. Conclusions

(i) The role for phonological markedness constraints on prosodic structure

- We have seen evidence from two lexical pitch accent languages for a role for familiar types of prosodic markedness constraints in defining the surface prosodic constituent structure of a sentence

- The hypothesis entertained here is that attested instances of nonisomorphism between syntactic (S) and prosodic (P) constituency, such as seen here in Northern Bizkaian Basque and Tokyo Japanese, are due to prosodic markedness constraints, rather than to correspondence constraints on the relation between S and P constituency as suggested earlier by Selkirk 1986, Nespor &Vogel 1986.

(ii) The nature of constraints on the relation between S and P constituency

- A new correspondence theory of the relation between S and P constituency was assumed in this paper, one in which Match constraints call for the output prosodic constituent structure to be faithful to— i.e. match up with-- syntactic constituency in the syntactic structure input. All data are consistent with Match theory, *modulo* the effects of prosodic markedness constraints.

- Adopting an OT perspective (see e.g. McCarthy and Prince 1995), we have modeled nonisomorphisms—namely departures from the perfect correspondence between S and P constituency that Match theory predicts-- as the consequence of language-particular constraint rankings in which some prosodic markedness constraint(s) are ranked higher than some Match correspondence constraint(s).

REFERENCES

Arregi, Karlos. 2002. *Focus on Basque Movements,* Ph.D dissertation, Linguistics and Philosophy, MIT.

Elordieta, Gorka. 1997. Accent, tone and intonation in Lekeitio Basque.In *Issues in the Phonology and Morphology of the Major Iberian Languages*, eds. F. Martínez-Giland and A. Morales-Front, 4-78. Washington, DC: Georgetown University Press.

Elordieta, Gorka. 1998. Intonation in a pitch-accent dialect of Basque. *International Journal of Basque Linguistics and Philology* 32:511-569.

Elordieta, Gorka. 2006. Binarity at the left edge of Intonational Phrases. Paper presented at *GLOW Workshop on Prosodic Phrasing, April 2006*, Universitat Autònoma de Barcelona.

Elordieta, Gorka. 2007a. A Constraint-based Analysis of restrictions on intonational realization of focus in Northern Bizkaian Basque. In *Tones and Tunes I: Typological Studies in Word and Sentence Prosody*, eds. Tomas Riad and Carlos Gussenhoven, 199-232. Berlin: Mouton de Gruyter.

Elordieta, Gorka. 2007cb. Minimum size constraints on intermediate phrases. *Proceedings of the 16th International Congress of Phonetic Sciences (Saarbrucken)*:1021-1024.

Gussenhoven, Carlos. 2004. *The phonology of tone and intonation*. Cambridge: Cambridge University Press.

Hellmuth, Sam. 2007. The relation between prosodic structure and pitch accent distribution: Evidence from Egyptian Arabic. *The Linguistic Review* 24:291-316.

Hualde, José Ignacio, Gorka Elordieta & A. Elordieta 1993 . "Focalización y prosodia en vascuence vizcaíno". *ASJU*, *International Journal of Basque Linguistics and Philology* 26, 1993, 731-749.

Inkelas, Sharon, and Zec, Draga. 1995. The Phonology/Syntax Interface. In *Handbook of Phonological Theory*, ed. John A. Goldsmith. Oxford: Blackwell Publishing.

Ito, Junko, and Mester, Armin. 2006. Prosodic Adjunction in Japanese Compounds. Paper presented at *Formal Approaches to Japanese Linguistics 4*, Osaka.

Ito, Junko, and Mester, Armin. 2007. Categories and projections in prosodic structure. In *OCP4 [Old World Conference in Phonology]*. Rhodes, Greece.

Ito, Junko, and Mester, Armin. To appear. Trimming the prosodic hierarchy. In *Prosody matters: Essays in honor of Elisabeth Selkirk*, eds. Toni Borowsky, Shigeto Kawahara, Takahito Shinya and Mariko Sugahara. London: Equinox Publishers.

Jun, Sun-Ah, and Elordieta, Gorka. 1997. Intonational structure of Lekeitio Basque. In *Intonation: Theory, Model and Applications*, eds. Atonis Botinis, Giorgios Kouroupetroglou and George Carayiannis, 193-196. Athens.

Kubozono, Haruo. 1993. *The organization of Japanese prosody*. Tokyo: Kurosio.

Myrberg, Sara. 2010. *The intonational phonology of Stockholm Swedish*. Ph.D. dissertation, Stockholm University.

Nespor, Marina, and Vogel, Irene. 1986. *Prosodic phonology*. Dordrecht: Foris Publications.

Pak, Marjorie. 2008. *The postsyntactic derivation and its phonological reflexes*, Ph.D. dissertation, Linguistics, University of Pennsylvania.

Selkirk, Elisabeth. 1986. On derived domains in sentence phonology. *Phonology Yearbook* 3:371-405.

Selkirk, Elisabeth. 1996. The prosodic structure of function words. In *Signal to syntax: Prosodic bootstrapping from speech to grammar in early acquisition*, eds. James L. Morgan and Katherine Demuth, 187-214. Mahwah, NJ: Lawrence Erlbaum Associates.

Selkirk, Elisabeth. 2000. The interaction of constraints on prosodic phrasing. In *Prosody: Theory and experiments*, ed. Merle Horne, 231-262. Dordrecht: Kluwer.

Selkirk, Elisabeth. 2006. Strong minimalist Spell-Out of prosodic phrases. In *GLOW Workshop on Prosodic Phrasing*. Universitat Auònoma Barcelona.

Selkirk, Elisabeth. 2009 On clause and intonational phrase in Japanese: the syntactic grounding of prosodic constituent structure. *Gengo Kenkyu 136: 35-73.*

Selkirk, Elisabeth. To appear. The syntax-phonology interface. In *The Handbook of Phonological Theory*, eds. John Goldsmith, Jason Riggle and Alan Yu. Oxford: Blackwell.

Selkirk, Elisabeth, and Tateishi, Koichi. 1988. Constraints on minor phrase formation in Japanese. In *Proceedings of the 24th annual meeting of the Chicago Lingusitics Society*, eds. M.G. Larson and Diane Brentari, 316-336. Chicago IL: Chicago Linguistics Society.

Selkirk, Elisabeth, and Tateishi, Koichi. 1991. Syntax and downstep in Japanese. In *Interdisciplinary approaches to langauge: Essays in honor of S.-Y. Kuroda*, eds. Carol Georgopoulos and Roberta Ishihara, 519-543. Dordrecht: Kluwer.

Smith, Jennifer. 2002. *Phonological Augmentation in Prominent Positions.* Ph.D. dissertation, Linguistics, University of Massachusetts Amherst.

Wagner, Michael. 2005. *Prosody and recursion.* Ph.D. dissertation., Linguistics, MIT.

Wagner, Michael. 2010. Prosody and recursion in coordinate structures and beyond. *Natural Language and Linguistic Theory*.

Yip, Moira. 2002. *Tone*: Cambridge Textbooks in Linguistics. Cambridge: Cambridge University Press.