

Monotonicity and the typology of front/back harmony systems

Péter Rebrus & Miklós Törkenczy

Research Institute for Linguistics, Hungarian Academy of Sciences (MTA)

In a recent paper (Kiparsky & Pajusalu 2003, K&P) the authors discuss backness harmony systems (in Balto-Finnic languages) and provide a typology of systematic disharmony, i.e. disharmony with neutral vowels in roots and root+suffix combinations, see (1) below where the brackets show morphological constituency and columns represent subtypes of disharmony; N stands for a neutral (phonetically front¹) vowel, B for a back harmonic vowel and F for a front harmonic one.

(1)	[[B N] F]	[[F N] B]	[[N] B]
a. Finnish	*	*	*
b. Uyghur	*	*	✓
c. (Unattested)	*	✓	*
d. Enarve Vepsian	*	✓	✓
e. Eastern Khanty	✓	*	*
f. (Unattested)	✓	*	✓
g. (Unattested)	✓	✓	*
h. (Unattested)	✓	✓	✓

Kiparsky and Pajusalu claim that the non-occurring types of disharmony are not accidental and present a markedness and local conjunction driven OT analysis of disharmony that only generates the occurring types.

In this paper we argue that -- although K&P's OT analysis does generate the typology -- it relies on stipulative constraints and is excessively complex in its interpretation of local conjunction and the ranking of conjoint constraints. K&P's approach is also flawed because it cannot analyse variation, i.e. 'mixed' types of disharmony systems of which Hungarian is an interesting example. We propose an alternative analysis which attributes the typology to a general principle of *monotonicity* which the existing types of (dis)harmony systems conform to, but the the unattested (and excluded) systems violate. Hungarian, a 'mixed' type of disharmony system which displays variation in a specific subtype of disharmony conforms to monotonicity too.

The strict linear order shown in (2) is imposed on the harmonic contexts for suffixal harmony [F]_, [FN]_, [(N)N]_, [BN]_, [B]_ by (i) their similarity to each other (= the (more) similar ones are closer to each other) and (ii) their proximity to the prototypical harmonic contexts ([F]_ for front harmony and [B]_ for back harmony):

(2) [F]_ > [FN]_ > [(N)N]_ > [BN]_ > [B]_

(2) is a harmonic scale ranging from the most harmonic back context to the most harmonic front one. The elements of the scale (the contexts) can be seen as attributes which are assigned the harmonic values F or B depending on the harmony they induce in a suffix in a given language.

The attested disharmony systems are shown as language types (the rows below) realising specific combinations of attribute-value pairs:

¹ For the sake of simplicity we only consider (as do K&P) (dis)harmony systems where neutral vowels are phonetically front.

(3)		[F]_	[FN]_	[(N)N]_	[BN]_	[B]_
A	Eastern Khanty	F	F	F	F	B
B	Finnish	F	F	F	B	B
C	Uyghur	F	F	B	B	B
D	Enarve Veps	F	B	B	B	B

In the attested (dis)harmony systems (i) neutral vowels may count phonologically as consistently front (type A), or (ii) as consistently back (type D), or (iii) as transparent but harmonic when not preceded by a harmonic vowel (type B) or (iv) as transparent but antiharmonic when not preceded by a harmonic vowel (type C).

We claim that this is due to the requirement that (given the fixed scale of harmony contexts) the distribution of values must be monotonic, where monotonicity means

- (4) If harmonic context X is more similar to context Y than to context Z, then the same is true of the values assigned to them (allowing for identity), i.e. the value assigned to X must not be more similar to the value assigned to Z than to the values assigned to Y.

As a consequence of (4), in attested (dis)harmony types the distribution of values assigned to the harmonic contexts (given the fixed harmonic scale) is always continuous (i.e. it is partitioned into just two domains of F and B): language types realising discontinuous patterns like (FBFBF), (FBBFF), (BFBBB), etc. are that ones that are unattested (impossible).

Languages may be 'mixed' types. In these cases variation occurs, i.e. more than one value is assigned to a given harmonic context. Hungarian is such an example, where lexical variation is found in the context [(N)N]_ (i.e. some all-neutral stems are antiharmonic). Monotonicity makes a prediction about the locus of such variation (i.e. limits the possible mixed types) and also predicts that antiharmony is only possible in a (dis)harmony system in which neutral vowels are transparent.

In the paper we discuss these issues and the Hungarian case in detail.

References:

- Kiparsky, P. and K. Pajusalu (2003) Towards a typology of disharmony. *The Linguistic Review* 20: 217–241.
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- Vago, Robert M. (1980) *The Sound Pattern of Hungarian*. Washington: Georgetown University Press.