

Underlying contrasts and the East Slavic post-velar fronting

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Phonologists working in a variety of theoretical frameworks have independently proposed that ‘minimal contrast’ plays an important role in phonology (Padgett 2003a, Nevins 2004, Calabrese 2005, Campos Astorkiza 2007). According to the definition proposed by Nevins (2004: 142), a segment S with specification αF is *contrastive* for F if there is another segment S' in the inventory that is featurally identical to S, except that it is $-\alpha F$. This definition is generally understood as applying to surface phonetic forms; Dispersion-Theoretic (DT) approaches (Flemming 2002, 2004, Padgett 2003a, b, Campos Astorkiza 2007) explicitly evaluate contrast with respect to the phonetic surface. I argue that the notion of minimal phonetic contrast is largely illusory (the phonetic surface being a hostile environment for minimal contrasts), and an inadequate basis for a general theory of contrast; moreover, it makes the wrong predictions about the phonology.

I argue that phonology is indeed sensitive to contrast, but the relevant type of contrast must be assigned hierarchically by successively dividing an inventory by a list of ordered features, as proposed by Jakobson and his collaborators (Jakobson, Fant and Halle 1952, Jakobson and Halle 1956; see Dresher 1998, 2008, 2009, Hall 2007, Mackenzie 2009). This procedure, called the Successive Division Algorithm (SDA) applies to underlying, not to surface, representations.

A hierarchical approach to contrastive specification allows for a superior analysis of the East Slavic post-velar fronting (Padgett 2003a). Between the 12th and 14th centuries East Slavic underwent a change, post-velar fronting, whereby sequences like [ki], [gi] and [xi] fronted to [k^ji], [g^ji] and [x^ji], respectively. This fronting did not cause a merger with sequences deriving from historical /k^ji/, etc., because these sequences had mutated to palato-alveolars such as [t^ji] prior to post-velar fronting. This change, known as the First Velar Palatalization (FVP), opened up a gap in the inventory, removing all sequences of [k^ji].

Padgett (2003a) proposes a DT analysis whereby the motivation for the change from [ki] to [k^ji] is the poor separation between [ki] and [ku]: it is argued that [k^ji] ~ [ku] makes a better contrast. While this is undoubtedly the case, Padgett's analysis must ignore other contrastive dimensions: in particular, [k^ji] ~ [t^ji] is a much poorer contrast than [ki] ~ [t^ji], as the FVP dramatically demonstrates. Padgett's DT analysis also requires very problematic machinery, such as restricting the grammar to evaluate a severely limited and arbitrary set of forms.

Moreover, the DT analysis is unable to capture the generalization posited by Jakobson 1929, whom Padgett credits as partially inspiring his own account. Jakobson proposed that the keys to the post-velar fronting are (a) the reanalysis of the formerly independent phoneme /i/ to be a positional [+back] allophone of the [-back] phoneme /i/; and (b) the lack of a front ~ back contrast in the velar consonants. Thus, a surface sequence [pi] can continue to be derived from underlying /pi/, because the contrastively [+back] /p/ bears a feature that spreads to /i/, backing it to [i]. But when surface [ki] is similarly reanalyzed as underlying /ki/, the /k/ lacks a contrastive [+back] feature that could back the /i/ to [i]; instead, /i/ palatalizes the velar, resulting in a diachronic fronting from [ki] to [k^ji].

The SDA is able to express Jakobson's insight directly, exactly as set out above. The SDA can also show why the feature [back] is non-contrastive in the velars, while coronal ‘unpaired’ consonants such as /t^j/, which lacks a non-palatalized counterpart, and /ts, ʒ, ʃ/, which have no palatalized partners, nevertheless function as contrastively [-back] and [+back], respectively. The conclusion is that phonology is sensitive to underlying contrasts derived by the SDA.

References

See Drescher (2009: §8.3) for a more detailed analysis

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