Laryngeal (dis)harmony, perception and the Dispersion Theory of Contrast

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In this talk, I extend the Dispersion Theory of Contrast (Flemming 1995, 2004, 2006) to cases of laryngeal harmony and disharmony. The central argument is that the driving force behind the three patterns of laryngeal (dis)harmony established in the literature is a restriction on *contrasts* between forms in a language, not restrictions on isolated forms or structures. Combinations of laryngeal features are only marked with respect to the other combinations with which they contrast.

The phenomena: Previous work on laryngeal harmony and disharmony has established three types of restrictions on ejectives, aspirates and implosives. MacEachern (1999) surveys what I call *dissimilatory* restrictions, languages where stops in a root must disagree in laryngeal features (1). *Assimilatory* languages, addressed by both Hansson (2001) and Rose and Walker (2004), show exactly the opposite pattern of dissimilatory languages: stops in a root must agree in laryngeal features (2). The third type of restriction, discussed in MacEachern (1999) as well as Hansson (2001) and Rose and Walker (2004), combines assimilation and dissimilation. Pairs of otherwise identical stops must agree in laryngeal features (3a). All other pairs of stops must disagree (3b). I refer to this type of restriction as *mixed*.

The analysis: I argue that the unifying factor between assimilatory, dissimilatory and mixed restrictions is neutralization of the contrast between forms with one and two instances of a laryngeal feature (* *k'-p'* v *k'-p*). While assimilatory and dissimilatory restrictions are compatible with other analyses, mixed restrictions provide striking support for a unified, contrast neutralization approach. At first glance, mixed restriction languages look like dissimilatory languages with an identity exception: all pairs of ejectives (or aspirates or implosives) are ungrammatical except for identical pairs. Upon closer examination, however, the difference between dissimilatory and mixed restrictions is more principled. Languages that allow identical consonants with the same laryngeal feature to cooccur (✓k'-k') systematically disallow pairs of consonants that contrast only for that feature (*k'-k). Similarly, languages that don't allow identical consonants (*k'-k') systematically do allow pairs of stops that contrast only in a laryngeal feature (✓k'-k). The trading relation in (4) holds for all ten languages in MacEachern's 1999 survey. Missing from the typology is a language that shows dissimilation in laryngeal features between non-identical consonants (i.e. has a laryngeal cooccurrence restriction), but either disallows (5a) or allows (5b) *both* identical consonants and consonants contrasting only in a laryngeal feature.

The hypothesis, (6), is that a 1 v 2 (*k'-p'* v *k'-p*) contrast in laryngeal features is perceptually weaker than either a 1 v 0 (*k'-p* v *k-p*) or 2 v 0 (*k'-p'* v *k-p*) contrast. If the hypothesis is correct, subjects should perform better on a discrimination task when presented with a pair of words exhibiting a 1 v 0 or 2 v 0 contrast than with a pair of words exhibiting a 1 v 2 contrast.

The analysis is cast within the Dispersion Theory of Contrast, which formalizes the idea that less perceptible contrasts are more marked, and thus more prone to neutralization than stronger contrasts. All three types of languages neutralize the 1 v 2 contrast yet preserve either the 1 v 0 or 2 v 0 contrast. Neutralization of the 1 v 2 contrast is driven by the systemic constraint LARDIST (7), which penalizes sets of forms that contrast one and two instances of a laryngeal feature. Preservation of the 1 v 0 or 2 v 0 contrast is accomplished by the systemic, anti-neutralization constraint *MERGE (8) (Padgett 2003). *MERGE ranks below LARDIST but above the contrast independent markedness constraints which determine the outcome of neutralization, like *ejective. The tableau in (9) gives a sample analysis of dissimilatory restrictions, and shows how the systemic constraints in (7) and (8) are evaluated.

Improvement on previous analyses: The analysis improves on previous work (MacEachern 1999; Hansson 2001; Rose and Walker 2004) in providing a unified and restrictive account of three phenomena. MacEachern analyzes dissimilatory and mixed restrictions as OCP effects, while Rose and Walker and Hansson account for assimilatory restrictions as consonant harmony. Neither analysis, however, accounts for all three restrictions, though there are important similarities between them. Furthermore, no analysis proposed thus far can account for the trading relation in (4), thus ruling out (as yet) unattested languages like those in (5). Unlike the current analysis, previous proposals are not adequately restrictive.

(1) Dissimilatory restrictions: Shuswap (MacEachern 1999) **✓ k'-p** ***k'-p'**
s-k'lep 'coyote' *s-k'lep'

(2) Assimilatory restrictions: Chaha (Rose and Walker 2004) ***k'-p** **✓ k'-p'**
jɨ-t'ək'ɨr 'he hides' *jɨ-t'əkɨr

(3) Mixed restrictions: Chol (Coon and Gallagher 2007)
a. otherwise identical consonants **✓ k'-k'** ***k'-k**
k'ok' 'health' *k'ok
b. all other consonants **✓ k'-p** ***k'-p'**
tʃ'ip 'to open' *tʃ'ip'

(4) a. ✓k'-k' ↔ *k'-k
b. *k'-k' ↔ ✓k'-k

(5) a. *k'-p' ✓k'-p *k'-k' *k'-k
b. *k'-p' ✓k'-p ✓k'-k' ✓k'-k

(6) Hypothesis: The contrast between roots with 1 v 2 ejectives is weaker than the contrast between roots with 1 v 0 or 2 v 0 ejectives, e.g. *k'api-k'ap'i* are less distinguishable than *k'api-kapi*.

(7) LARYNGEALDISTANCE Forms with 1 and 2 instances of a laryngeal feature do not contrast.

(8) *MERGE No output word has multiple input correspondents.

(9)

/k'-p' k'-p k-p/	LARDIST	*MERGE	*ejective
k'-p' k'-p k-p	* !		***
k'-p' k'-p	* !	*	***
k'-p' k-p		*	** !
→ k'-p k-p		*	*
k-p		** !	

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