

ABSTRACT OF THE DISSERTATION

*Degrees of Incompleteness in Neutralization:  
Paradigm Uniformity in a Phonetics with Weighted Constraints*

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This dissertation presents two case studies of incomplete neutralization: flapping in American English and monomoraic vowel lengthening in Japanese. Experimental evidence is provided showing that the underlying contrast in each case is, indeed, only partly neutralized. I argue that these cases represent two distinct points on a continuum of completeness of neutralization: monomoraic vowel lengthening in Japanese results in a surface distinction that is plausibly perceptible, while flapping in American English results in /d/ flaps and /t/ flaps which cannot be distinguished—a claim supported by a series of perception experiments (Experiments 3, 4, and 5).

First, I argue that incomplete neutralization is not solely due to experimental artifacts or task effects, as some scholars have claimed. Experiments 1 and 2, both on flapping in American English, consist of two task types—one designed to increase the potential for these effects, and one designed to reduce them. I show that the degree of neutralization remains constant between these two task types, suggesting that results of incomplete neutralization cannot all be reduced to these extragrammatical factors.

Second, I address the types of contrasts which can be incompletely neutralized. The vast majority of studies on incomplete neutralization have thus far centered on feature-

and segment-level contrasts (especially final devoicing). I show in Experiments 6 and 7 that the Japanese short/long vowel length contrast is incompletely neutralized in monomoraic noun lengthening contexts. I suggest that the typology of processes that can lead to incomplete neutralization must be expanded to include those that operate on suprasegmental or prosodic contrasts.

Third, given the results of the experiments, I claim that incomplete neutralization is best accounted for in a model of phonetics based on a weighted-constraint grammar (Legendre et al. 1990, Zsiga 2000, Flemming 2001). I propose two types of constraints: the first pressures segments to match a target value for a given phonetic measure (Flemming 2001). The second type of constraint, based on the notion of transderivational identity (Benua 1997, Steriade 2000), requires candidates to match a base form for a given phonetic measure. I argue that basehood for this type of transderivational identity is best determined by type frequency within a candidate's inflectional paradigm.

These phonetic constraints differ from the familiar phonological constraints of, e.g., Optimality Theory in two major ways. First, phonetic constraints may make reference to both phonological structures as well as raw, quantitative phonetic information. Second, constraint conflict is resolved by compromise, rather than strict domination as in a ranked-constraint grammar. This ability to compromise, found in weighted-constraint grammars, combined with access to quantitative phonetic detail, allows the model to generate languages at both the plausibly perceptible end of the incomplete neutralization spectrum (like Japanese) and the imperceptible end (like American English), as well as the continuum in between.

Finally, I show that this model better accounts for the Directionality Generalization of incomplete neutralization than its competitors. The Directionality Generalization reflects the fact that the realization of two incompletely neutralized categories, / $\alpha$ / and / $\beta$ / is predictable: [ $\alpha$ ] will be more like the canonical realization of / $\alpha$ / in non-neutralizing contexts than [ $\beta$ ] will be.