

UNIVERSITY OF CALIFORNIA

SANTA CRUZ

**NASALIZATION, NEUTRAL SEGMENTS,  
AND OPACITY EFFECTS**

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of the requirements for the degree of

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in

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by

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## Abstract

### NASALIZATION, NEUTRAL SEGMENTS, AND OPACITY EFFECTS

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This thesis explores cross-linguistic variation in nasal harmony. The goal is to unify our understanding of nasal harmony so that patterns across languages conform to one basic character and to examine the wider implications of this account for phonological theory.

The analysis builds on generalizations from a comprehensive survey documenting variation in three descriptive sets of segments in nasal harmony: *targets*, which become nasalized, *blockers*, which remain oral and block spreading, and *transparent segments*, which remain oral but do not block. The typological generalizations established by this study provide strong support for a unified view of nasal harmony in which variation is limited in a hierarchical fashion.

To capture cross-linguistic variation, this analysis draws on a phonetically-grounded constraint hierarchy ranking segments according to their incompatibility with nasalization (building on Schourup 1972; Pulleyblank 1989; Piggott 1992; Cohn 1993c; Padgett 1995c; Walker 1995). Constraint ranking and violability, fundamental concepts in Optimality Theory (Prince and Smolensky 1993), also play a crucial role. Ranking a [nasal] spreading constraint at all points in relation to the hierarchy of violable nasalization constraints achieves precisely the attested set of patterns.

Another typological discovery is that transparent segments pattern with targets and should be regarded as belonging to this set of segments. A theoretical consequence is that [nasal] spreading never skips a segment, finding new support for strict segmental locality (Ní Chiosáin and Padgett 1997; cf. Gafos 1996). The resulting challenge is determining what produces surface-transparent outcomes. Building on early derivational approaches (e.g. Clements 1976; Vago 1976), I propose to analyze segmental transparency as a derivational opacity effect. Following McCarthy (1997) and extensions by Itó and Mester (1997a), I achieve derivational opacity effects in Optimality Theory through a correspondence relation between the actual output and a designated ‘sympathetic’ (failed) member of the candidate output set. Sympathetic correspondence realizes transparency by selecting the output most closely resembling the nasal character of the fully-spread sympathetic form, while respecting nasal

incompatibility constraints for segments that behave transparent. Importantly, by bringing segmental transparency under the wing of derivational opacity, transparency-specific representations can be eliminated from the theory.

Chapter 1 presents background. In chapter 2, I develop a unified description and analysis of a cross-linguistic typology of nasal harmony. Chapter 3 turns to the analysis of transparent segments and a case study of nasal harmony in Tuyuca. Chapter 4 presents an acoustic study of nasal harmony forms in Guaraní which verifies that voiceless stops are truly surface-transparent. In chapter 5 I consider other proposals for the analysis of transparent segments, and in chapter 6 I examine other phenomena that may be mistaken for [nasal] feature spreading. Nasal agreement in Mbe forms a case study involving reduplication.

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