Paradigmatic Motivation for Vowel Features

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My paper will examine the nature of vowel-height features as demonstrated in vowel harmony processes. I will argue that distinctive features are not predicated on universal phonetic specifics – articulatory (SPE) or acoustic (Element Theory) – but rather represent nodes within one of two abstract but simple and highly constrained templatic paradigms. The phonetic specifics of distinctive features are the product of the language-specific segmental inventory and the superimposition of one of the paradigms onto that inventory. An interesting and unexpected finding is that closely related languages - Bantu and dialects of Italian - can and do access different paradigms between the two possible.

Vowel harmony systems can be divided into two basic types – scalar (chain-shift) and non scalar. Phonetically motivated feature systems are incapable of accounting for scalar harmony without recourse to ad hoc self-modifying conditions, cleanup rules or feature co-occurrence constraints. Clements (1991) offers a model of vowel height incorporating degrees of openness along a scalar continuum. This model, called the Aperture Node model (hereafter AN) accounts succinctly and elegantly for harmony in languages that exhibit scalar raising or lowering (Nzebi, Esimbi, Basaa, et al.). Paradigmatically, the AN model can be represented as a series of binary, left-headed branching nodes (Fig.1a). The AN model offers an abstract, purely phonological paradigm that nonetheless obeys phonetic reality in a very constrained fashion.

However, the majority of vowel harmony systems are not scalar ([ATR] systems, etc. as in KiNande, Brazilian Portuguese, Igbo, Northern Salentino, Lhasa Tibetan, Yoruba, et al.). To account for non-scalar systems, an argument is made for the notion of subregisters – the phonological subdivision of a point along the scalar continuum (Clements (1991), Clements & Hume (1995), Wetzels (1995)). This modification (Fig.1b) of an otherwise highly constrained model is based on the fact that (in Clements (1991) for example) the languages involved are related (Bantu), and should therefore, at some level, access the same paradigm - in this case, a continuum. However, the location of the subregister is unconstrained, weakening the otherwise robust explanatory power of the AN model. It also carries the suggestion that scalarity is more common than previously assumed and possibly a universal.

To account for non-scalar systems, I will argue for a fundamentally different paradigm called the Nested Subregister model (hereafter NS). In it, the phonology bifurcates the language-specific vowel inventory along the height continuum, and then subdivides each ‘half’ resulting in four phonological heights (Fig.1c). It is founded on ideas from Clements (1991) – (i) that phonological registers can subdivide the segmental inventory and (ii) that the features themselves do not reference or suggest specific phonetic correlates as universal definers of vowel height. It departs from the AN model in that there is no continuum – subdivision is the driving force behind the paradigm. The NS model can account for height harmony in languages with segmental inventories ranging from 5 phonemic vowels (ChiChewa, LuGanda, Pulaar, et al.) to 12 phonemic vowels (Lhasa Tibetan). Further, it can do so without recourse to feature co-occurrence constraints, cleanup rules, or other ad hoc modifications to the system. In other words, harmony is a direct reflection of a simple, paradigmatic organization of the segmental inventory.

Two points of interest with the NS model are (i) There is no feature [low]. Low vowel opacity is an instantiation of a more general constraint governing the interface of Height and Place (Riggle (1999) and Salting (1998)). (ii) Because the NS model argues for four heights only, 7-vowel inventories usually have an empty node. Harmony rules for these languages often
create feature combinations for the empty node, and it is precisely in these languages that one sees a variety of compensating strategies including high-vowel opacity (Yoruba), epenthesis (Northern Salentino) and segment creation (KiNande), all predicted by the empty node.
Models of Vowel Height Features

a. Aperture Node Model  
b. Aperture Node w/subregister  
c. Nested Subregister model

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