Losing the head: sequential ordering in vowel systems

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This paper explores a possible alternative to the use of headedness in the representation of vowels by examining evidence for sequential featural ordering. The notion of headedness is frequently used in Element Theory (Harris and Lindsey 1995) analyses of vowel systems to represent the relative saliency of one elemental prime vis à vis another by means of a hierarchical ordering relation. For example, in a seven vowel system, /i e ɛ a ɔ o u/, the vowel /e/ might be represented with |I̲| as head and |A| as operator, i.e. with the combination |I̲ A| attached to a given vocalic position. On the other hand, /ɛ/ might be represented with the same elements in the opposite headedness relation, i.e. |I A̲| (Backley 2011). However, there are instances in which elements appear to be sequentially rather than hierarchically ordered. These are the focus of this paper.

In Sanskrit, [e:] alternates freely with [ai], suggesting the sequential ordering |A→I|, whereas in Irish, [e:] alternates with [iə], suggesting instead the ordering |I→A|. Further data may be adduced from other languages. Interestingly, British English and the English of Northern Ireland appear to have diametrically opposed sequential ordering: the vowel in *rate*, *late* etc. is pronounced as a falling diphthong [eɪ] in British English, but as a centralising one [iə] in Northern Irish English.

It is suggested that such phenomena can be dealt with in two ways. Firstly, a more finely-grained model of prosodic constituency, such as the separation of the vocalic position into subpositions (e.g. defining first and second formant, or alternatively onset, target and offset), may obviate the need for combinatory featural specifications. Secondly, if such specifications are necessary, they may be sequentially rather than hierarchically ordered. Sequential ordering of this nature allows vowel systems (which are based on distinctions in first and second formants) to be modelled in the same way as tonal systems (which are based on distinctions in fundamental frequency). Sequential ordering of featural specifications in a more finely-grained model of prosodic constituency can thus render headedness unnecessary, at least as regards vowel representations.

Harris, John and Lindsey, Geoff (1995). 'The elements of phonological representation' in Durand and Katamba eds. *Frontiers of phonology: atoms, structures, derivations*. Harlow, Essex: Longman, 24-79.
Backley, Phillip (2011). *An introduction to element theory*. Edinburgh: Edinburgh University Press.