

Minimalist/Substance-free Feature Theory: Case Studies and Implications

Bruce Morén

CASTL, University of Tromsø
bruce.moren@hum.uit.no

Recall that there are three major phonetic components that are referred to in the features literature (i.e. feature definitions): articulatory, acoustic/auditory and aerodynamic (perhaps non-language-specific perception should be included as well, e.g. filtering effects of the auditory system, sensitivity asymmetries, etc.). These three major components are often mapped/related to one another in fairly transparent ways, but there is also the opportunity for ambiguity in the mapping/relationship.

- 1) Maximum constriction of the general vocal tract (i.e. a single laryngeal or supra-laryngeal closure) often results in a lack of airflow through the vocal tract and a period of silence in the signal - i.e. maximum constriction + lack of airflow + silence.
- 2) A lowered velum corresponds to nasal airflow and nasal cavity resonance (i.e. nasal formants) - i.e. lowered velum + nasal airflow + nasal resonance.
- 3) A less than maximum constriction of the oral tract usually results in oral cavity airflow and a period of noise in the signal - i.e. significant constriction + restricted airflow + noise.

However, this is not always the case. Combinations of articulations can yield complexities/ambiguities.

- 1) Maximum constriction of the oral tract combined with lowered velum corresponds to lack of oral cavity airflow + nasal airflow + loss of some signal associated with the oral tract + nasal resonance.

One ambiguity here has to do with the status of “continuous airflow” as a potential feature/feature component - is there a lack of airflow or not in the articulation of a nasal stop? The question becomes subtler if we look at a lateral approximant or fricative - i.e. there is a maximal oral constriction at the same time there is continuous airflow through the oral tract. Are constriction and airflow both possible features/feature components?

- 2) Maximum constriction of the oral tract combined with non-maximum constriction of the glottis sometimes corresponds to a lack of airflow through the oral tract + resonance related silence + airflow across the glottis + a voicing bar. Should the articulatory constrictions be features or feature components? Should the acoustic effects of each, individually, be features or feature components? Should the different types of airflow be features or feature components?

It does, of course, get more complex - just imagine a glottalized, nasal click!

All of this is just to suggest that the relative confusion in the literature regarding what articulatory, aerodynamic and acoustic phonetic characteristics should map/correspond/define particular features or segment types is only natural. It is a complex situation with no clear-cut answer - particularly if one acknowledges the fact that some characteristics (i.e. periodic glottal pulsing/voicing bar) can arise from or be suppressed by a number of different glottal and oral tract configurations and delicate aerodynamic situations. Combine this with what look like active phonological patterns that sometimes suggest one characterization of the world (e.g. nasals pattern like stops) but other times suggest other characterizations (e.g. nasals pattern like fricative or non-obstruents or alternate with high vowels) and we can see why there is often confusion in the phonological feature literature with respect to the relationship between phonological features and phonetics.

In addition, given the range of possible phonetic characteristics and their combinations that can straightforwardly contrast with one another within a particular language, how can we be certain that these characteristics or certain combinations must always correspond to the same phonological feature or feature combinations across languages? This is certainly the hypothesis/claim proposed by Jakobson and assumed by the majority since, but is this a necessary conclusion? It seemed to have been rejected by the Structuralists, did they have reasons for this?

I will not satisfactorily answer these questions, but will provide several examples suggesting that the language-particular emergent feature hypothesis (pointedly not Jakobsonian) might actually have some empirical support OR at least should be explored more carefully as a viable hypothesis.

Below are two charts with a range of articulatory, aerodynamic and acoustic characteristics and their relationship to particular segment types (some of this could be wrong, I am doing it on the fly! - but you should be able to get the idea):