

The atoms of phonological representation: features vs gestures

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Is the Phonetic Form of human language underlyingly organised in terms of distinctive features, or articulatory gestures? In terms of their inventory of primitives Distinctive Feature Theory (DFT; Jakobson, Karcevsky, and Trubetzkoy 1928) and Articulatory Phonology (AP; Browman and Goldstein 1986) are with a minor exceptions largely interchangeable (Zsiga 1997), but I argue that they differ significantly with respect to the empirical predictions made by the theoretical frameworks within which they are generally embedded. In this regard DFT is to be preferred, insofar as (when situated within a conventional generative model such as Rule-Based Phonology (RBP, Kenstowicz 1993)) it correctly predicts the existence of three classes of effects ruled out by AP:

1. **non-conservatism.** By disallowing insertion of gestures (Browman and Goldstein 1992), AP but not DFT+RBP predicts that processes of insertion, enhancement, and inversion should be impossible, but each exists:
 - insertion operations such as (i) epenthesis and (ii) filling in of underspecified features. (i) British English "intrusive r" (e.g. *yeh, I did* → [jɛ.ɹɑɪdɪd]) is one of many examples of epenthesis which cannot be attributed to gestural misphasing, the usual strategy invoked to deal with epenthesis in AP. (ii) Hwang et al. 2010 find psycholinguistic evidence for (underlying) underspecification of voicing in English coda obstruents that can be shown to receive voicing values by the end of the derivation.
 - enhancement effects, such as insertion of nasality in domain-final voiced obstruents (Jones 2001).
 - inversion processes, such as exchange rules (e.g. height exchange in Brussels Flemish, Zonneveld 1976) and dissimilations (e.g. Modern Greek continuancy dissimilation, Tserdanelis 2001). DFT predicts the possibility of exchange and dissimilation rules by virtue of employing binary features, whereas such processes are predicted to be impossible by AP, whose subsegmental primitives are privative or at least non-binary.
2. **granularity.**
 - By having *fewer* representational primitives, AP wrongly predicts that the elements present in DFT but absent in AP, such as [atr] and [distributed], will not be phonologically active.
 - By *combining* the equivalents of several features in single gesture packages, AP predicts that its equivalents of these features will always pattern together in phonological processes and never show autosegmental behavior. For instance, DFT allows for spreading and delinking of stricture and manner features such as [cont] and [cons], whereas AP does not. Kaisse 1992 provides arguments for [cons] being able to spread autosegmentally, as do Olson and Schultz 2002 for [son].
 - By *dividing* the functions of some features across several different gestures and parameters, AP predicts that these features will never show coherent autosegmental behavior. The DFT feature [cont], for example, has at least four functional equivalents in AP, {closed} and {crit} for coronals, and {wide} and {narrow} for dorsals. The above-mentioned Greek continuant dissimilation shows that [cont] acts as a coherent feature.
3. **relativised locality.** By virtue of its linear, surface-driven representational structure, AP predicts that all spreading should be strictly local, whereas DFT allows for non-contrastive intervening material to be ignored (Calabrese 1995). Nevins and Vaux 2004 provide phonetic and phonological evidence for Karaim consonant harmony doing precisely that.