The Non-Trivialness of Segmental Representations

Christian Uffmann, University of Sussex

While a considerable amount of research in phonology in the 1980s and early 1990s centered around theories of phonological representations (such as Autosegmental Phonology, Metrical Phonology and Feature Geometry), with the explicit goal of locating linguistically significant generalisations within a theory of representations, the focus of research shifted with the advent of Optimality Theory to constraint interaction (and thus the theory of phonological operations) as the main or only source of explanatorily adequate generalisations. In much current OT research, representations thus play only a minor role. They exist because constraints are always constraints over representations, but the nature of the representations themselves has frequently been ignored.

This lack of attention to phonological representations would be justified if it could be shown that the shape and content of representations is trivial, in the sense that it does not contribute significantly to our understanding of phonological processes or generalisations. In particular, representations may be trivial in two respects:

1. Different representational assumptions converge upon similar Optimality-Theoretic analyses. The linguistically relevant generalisations thus reside within the theory of constraints, the use of different representational theories amounting to little more than an empirically negligible issue of formal implementation.

2. Segmental representations, in terms of distinctive features, are trivial in the sense that the featural make-up of a segment is mechanistically determined by the substantive properties of that segment (such that, say, [u] is [+high,+back,+round]).

This talk will challenge both assumptions and present arguments for why the study of representations is important for a fuller understanding of phonological processes and generalisations. Since the debate regarding the division of labour between constraints and representations seems to have reached a stalemate in which arguments in favour of one or the other are often based on theory-internal considerations or notions of elegance as much as on empirical adequacy (see e.g. the contributions in Blaho, Bye & Krämer 2007), I will also draw upon evidence for representations from an area in which constraints or operations by definition play no role, viz. the phonetics-phonology interface, arguing that the way in which surface representations are realised phonetically provides valuable insight into the nature of these representations. In particular, I will defend a theory of autosegmental representations that are surface-underspecified and thus open up the possibility for phonetic variation that is analysed as being outside the system of phonological computation proper. The representational conclusions drawn from these analyses will then be applied to the system of phonological alternations, to test their empirical plausibility.

Two case studies will illustrate this approach, each one highlighting one of the two above claims regarding the potential trivialness of representations. Regarding the argument that different representational theories can converge on the same type of OT analysis, regressive voicing assimilation as a cross-linguistically common process will be used as a case in which different representational assumptions necessitate the formulation of different pro-assimilation constraints whose position in the ranking, however, will be the same, apparently confirming claim 1. Closer scrutiny of the phonetics of this process in Syrian Arabic (Heselwood & Ranjous 2007), however, is strongly suggestive of an autosegmental approach to assimilation; the cluster is treated as a single unit in Syrian Arabic, the requirement being that there is voicing somewhere on the cluster in the case of [+voice] spreading, leading to a considerable amount of surface variation some of which seems to contradict known generalisations about assimilation and should therefore probably not be treated phonologically but as an instance of surface phonetic implementation (for example,

the output of assimilation can be a sequence [voiced-voiceless] for the input /voiceless-voiced/).

The second case study will look at selected aspects from ongoing research on phonetic and phonological change in South-Eastern British English. In this accent, vowels are currently shifting quite dramatically, with back/high vowels fronting and unrounding, and a counter-clockwise rotation of most of the remainder of the system, leading not only to vowel realisations that are quite distinct from traditional Received Pronunciation, but also, at least for some speakers, to near-merger situations (e.g. /iː–uː, ey–ow, e–æ/). Given claim 2, that feature specifications can be read off of a segment's surface properties, these realisational changes of the vowels would suggest a change in phonological specifications as well (and raise the question of how near-mergers are represented in such a deterministic system), which, in turn, could potentially influence the stability and productivity of phonological processes. Moreover, the change is highly variable, leading to considerable surface variation between speakers (and, for some vowels, there is also a considerable amount of intra-speaker variation). Does that mean that there is currently a multitude of phonological grammars present within a single speech community, reflecting the degree to which this change has been implemented?

Focussing on the high–back vowel area, I will show that existing phonological alternations are unaffected by this change although their phonetic motivation is obscured. A case in point is hiatus resolution (see e.g. Uffmann 2007): Although /uː/ fronts and variably unrounds and /ɔː/ raises into the approximate position of /uː/, [w] is still inserted after /uː/, and [r] is inserted after /ɔː/. At the same time, a new alternation has emerged, leading to the neutralisation of /uː, ɔː/ and variably /ʊ/ before coda-/l/, raising the question of how stability and change can be modelled simultaneously, especially since the same vowels are (un-)affected, /uː and ɔː/. Coda-/l/ complicates the picture further because it tends to be vocalised and then neutralises with /ɔː/, without, however, undergoing hiatus resolution in the way that underlying /ɔː/ does (no insertion of [r], causing surface (counterfeeding) opacity). I will propose a solution in terms of minimal feature specifications (see e.g. Morén 2007) and phonetic underspecification (Keating 1988, Hale, Kissock & Reiss 2007) that can capture the surface phonetic variation and account for both old and new phonological alternations, arguing that an analysis in terms of constraint interaction alone has problems with accounting for the empirical facts and also misses some important generalisations about the phonology of younger South-Eastern British English.

References:

Blaho, Sylvia, Patrik Bye & Martin Krämer. 2007. *Freedom of Analysis?* Berlin: de Gruyter.

Heselwood, Barry & Rawya Ranjous. 2007. 'Voicing patterns in Syrian Arabic stop sequences: evidence against an assimilatory account'. Paper presented at LAGB 2007, King's College, London.

Keating, Patricia. 1988. 'Underspecification in Phonetics'. *Phonology* 5, 275-292.

Morén, Bruce. 2007. 'The division of labor between segment-internal structure and violable constraints'; in: Blaho, Bye & Krämer (eds.), 313-344.

Uffmann, Christian. 2007. 'Intrusive [r] and optimal epenthetic consonants'. *Language Sciences* 29, 451-476.