

Commentary on Bird and Klein

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As Bird and Klein rightly observe, phonological thinking has lagged behind that in syntax and semantics: the metaphor of underlying representations being transformed via an ordered set of rules, long abandoned in syntax, is deeply ingrained in phonology. The cleanest break with this tradition is represented by declarative phonology, of which the current paper is an instance; indeed, the adoption of an HPSG-style typed-feature formalism makes it clear how much Bird and Klein want phonology to be like syntax. Now, the HPSG formalism is just that, a formalism. It neither is a theory of phonology per se (the theory consisting in constraints statable in terms of the formalism), nor does it imply anything about the actual implementation, which they envision in terms of Bird and Ellison's *one-level phonology* model: a crucial property of both the theory and its implementation is that it be one-level, since this avoids the 'rule conspiracies' inherent in multi-level models. Bird and Klein exemplify the approach with two detailed case studies, which give a good sense of the range of phenomena that are amenable to a one-level analysis. At one extreme is Sierra Miwok templatic morphology, which few phonologists would now analyze using rewrite rules, and where a standard autosegmental analysis is already largely declarative. At the other is French schwa 'deletion,' which is interesting because the phenomenon *seems* to require a rewrite rule. For Bird and Klein, the actual 'deletion' of schwa is handled by allowing schwa to be optional in lexical entries, with its appearance or nonappearance following from general properties of French syllable structure: a declarative one-level approach turns out to be more explanatory than a rule-based one.

Nonetheless, I still have concerns about one-level phonology. Consider Xiamen tone sandhi (XTS) (Chen 1987). In an XTS domain, only the domain-final tone surfaces in its 'underlying' form: all others must change according to a rule whereby, for example, the tonal sequence 1-2-3-4-5 surfaces as 7-1-2-8-5. Crucially, there is *nothing* ill-formed about 1-2-3-4-5 as a surface sequence of tones: it could represent (underlying) 2-3-7-8-5, for example. It seems that XTS cannot be treated *interestingly* as a surface constraint, but must be viewed as a conditioned transduction between underlying and surface forms. And consider that multilevel models implemented using finite-state transducers are useful not only for describing phonological or orthographic regularities, but also the mapping between orthography and phonology. So, in a Russian text-to-speech system, one might compute the pronunciation of the orthographic word *стол* (table-Prep.Sg.) by transducing it to a morphologically annotated representation (стол+é), which includes crucial accentual information; and then computing the pronunciation (/staljé/) noting, for instance, that pre-accentual *o* is /a/ and not /o/. A multilevel model enables one to readily state relations between what must be viewed as different levels of representation for the same word. It remains to be shown how a one-level approach would work.

References

- Chen, M. (1987). "The syntax of Xiamen tone sandhi." *Phonology Yearbook*, 4, 109-149.

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