

On Evolutionary Phonology

Blevins, Juliette. 2004. *Evolutionary Phonology: The Emergence of Sound Patterns*. Cambridge: Cambridge University Press.

by Bridget Samuels

As its name suggests, Evolutionary Phonology (EP; Blevins 2004) finds parallels in evolutionary biology. Blevins makes several mentions of Darwinian principles such as adaptation and in many cases utilizes language and reasoning that would not seem out of place in the evolutionary biology literature. However, she cautions that parallels to Darwin are necessarily “largely metaphorical” because phonological systems are learned, not transmitted in the DNA (xi). Here I think Blevins gives herself too little credit. Salikoko Mufwene (2001 *et seq.*) has made convincing arguments that languages can and should be viewed as species, with idiolects parallel to individual organisms, and that “[this] approach is analogical only to the extent that it is inspired by scholarship on biological evolution” (Mufwene 2005: 30). Certainly, the evolutionary jargon Blevins applies to linguistics is no more metaphorical than other such terms already in wide use, such as “genetic relatedness.” Elsewhere, such as in chapter 2’s discussion of adaptation, the correct parallels with biology are less obviously helpful, as Blevins notes. She speaks of multiple dimensions of adaptativeness — one for ease of acquisition, one for ease of articulation, and one for ease of communication — but downplays the roles of adaptation, non-adaptation, and disadaptation in sound change. Probing this further could provide an interesting avenue of research; one gets the feeling that the story here may not be a simple one.

The fundamental tenets of EP resonate with arguments made by the Neogrammarians, Otto Jespersen, Joseph Greenberg, and particularly Baudouin de Courtenay. These founding fathers of phonology were adamant that synchronic sound systems are best understood through the changes that produce them. Blevins also espouses this principle but differs from the tradition by rejecting teleology in sound change. For her, the only goal-directed processes that interact with pure phonological change are morphological analogy and the pressure to preserve paradigms where adhering to a regular sound change would cause paradigmatic contrasts to collapse. The elimination of teleology from phonology provides one way in which EP differs from the currently dominant paradigm in synchronic phonology, Optimality Theory (OT; Prince & Smolensky 1993).

EP and OT also clash in another closely related domain, namely how the relative frequencies of various sound patterns should be explained. In OT,



constraints on synchronic grammars and cross-linguistically fixed rankings of such constraints serve to create a markedness hierarchy. The more marked a sound pattern, the rarer it will be. In contrast, EP treats markedness as an epiphenomenon — an E-language concept belonging strictly to the domain of performance, not competence. Under this conception of phonology, because some sound changes are rare, the synchronic patterns created by those changes will also be rare. Another reason why some sound patterns are rare is that multiple independent sound changes must occur sequentially in order for those patterns to arise. Patterns formed by common changes or sets thereof will occur at a higher frequency than patterns necessitating rarer chains of events. Thus, the work done by synchronic constraints in OT instead falls upon the language acquisition mechanism, which itself drives phonological change. Understanding diachronic phonology thus requires synthesizing research from such disparate domains as phonetics, auditory perception, language acquisition, typology, dialectal/idiolectal variation, experimental phonology, and phonological theory.

Apart from simply making use of diachronic phonology to explain synchronic patterns, Blevins also proposes a new model of sound change itself. All phonetically-motivated sound change falls into one (or more) of three categories in the ‘three-C’ model of EP: CHANGE, CHANCE, and CHOICE. The first of these, CHANGE, covers the range of cases in which a learner mishears an utterance and treats it as a token of a different but perceptually similar utterance. An example of CHANGE that Blevins gives is the sequence /anpa/ being misinterpreted as /ampa/ due to the weakness of the cues indicating the place of the pre-consonantal nasal.

CHANCE changes are those in which the hearer reconstructs an underlying representation of an inherently ambiguous signal which differs from that of the speaker. A hypothetical instance of CHANCE would involve [ʔaʔ] being analyzed as /ʔa/, /aʔ/, /ʔaʔ/, or /a/, provided this representation differs from what the speaker has in mind. Frequency guides the analysis, so less frequent sequences are less likely to be posited as underlying forms. Language-specific constraints, which themselves must be learned in the EP model, may also come into play here, though I do not see how the phonologist (or the child) can determine when to posit a constraint and when doing so would be redundant restatement of a generalization better left as emergent. The Feature-to-Segment Mapping Principle, a property of the acquisition process with OCP-like effects, also affects CHANCE, leading the learner to assume a single source for a single phonetic feature, disadvantaging a multiple-source analysis like /ʔaʔ/. The result of CHANCE is imperceptible, entailing no immediate change in pronunciation.

CHOICE, in contrast, produces tiny shifts in pronunciation akin to those documented in the Labovian tradition. When there are multiple variants of an utterance in circulation and the hearer adopts a phonological representation or “best exemplar” that differs from the speaker’s, this is an instance of CHOICE. Upon hearing [kkáta] in alternation with [kǎkáta] and [kakata], a listener could assume underlying /kkáta/ and an epenthesis rule, rather than the speaker’s underlying /kakata/ with a vowel shortening/deletion rule. In none of these three types of sound change do we see ease of articulation or ease of pronunciation directly influencing the direction of change. Instead, like markedness,

these are taken to be emergent properties.

EP's three-C model of sound change feels intuitive in some respects. It is hard to argue that something very much like CHANCE, CHANGE, and CHOICE do not play any role in sound change. However, it is less clear that they are the *only* players: Explaining how these mishearings of individual words eventually explain Neogrammarian-style exceptionless sound change would not be a trivial task. It is not enough simply to say that completed sound changes undergo lexical diffusion (p. 260). Nor is it readily apparent that distinguishing among these particular three categories elucidates anything. There seems little hope of ascertaining which C has operated to produce a specific change, either *a priori* or in practice. And if this cannot be done, then the categories are deprived of utility or individual character.

Another dichotomy emphasized in the book, the distinction between 'natural' and 'unnatural' or 'crazy' phonology, could use clarification. On several occasions Blevins switches between discussion of unnatural *rule types* and unnatural *sound patterns*, which are quite separate matters. A strange historical development can in theory give rise to a well-behaved synchronic system, just as one or more natural phonological changes in the history of a language can produce sound patterns that seem unusual. In section 3.1 we are told that "this contrast [between natural and unnatural rule types — BS] is central to Evolutionary Phonology" (p. 71), but this thread is left dangling and a few pages later we are led to the conclusion that distinguishing between natural and unnatural sound patterns "seems unwarranted and indeed misguided" (p. 78). This is indeed a coherent position insofar as rules (be they diachronic or synchronic) and sound patterns can be divorced, but the discussion could perhaps benefit from making the discussions of synchronic and diachronic naturalness explicitly distinct.

In many ways, EP represents an original research program and makes predictions that differ from those made by previous theories of synchronic and diachronic phonology. Nevertheless, in at least one respect, it runs into familiar problems faced by other models. The EP theory of chain shifting largely resembles the one put forward by William Labov (1994), for better or for worse. Both make use of exemplar theory to advance sound change, and both take the gradualness of sound change and the continuousness of the vowel space seriously. I quote below from a summary of EP position on chain shifting:

Vocalic chain shifts are the combined result of intrinsic variation with the prototype structure of vocalic categories. Chain shifts can arise naturally when a formerly occupied area of the psycho-acoustic space is opened up, with variation giving rise to better prototypes of a pre-existing category in the newly opened space. (Blevins 2004: 291)

Such a model fails to account for any shift in which one vowel moves anywhere other than the midway point between its neighbors, as must happen in the "encroachment" commonly thought to cause push chains. These limitations fall naturally out of the particular type of exemplar theory that Blevins adopts.

The basis of Blevins' mechanism is Pierrehumbert's (2001) exemplar-based model of perception, which EP uses to account for production facts as well. In

this model, when a speaker wants to produce a vowel — [u], for the sake of argument — he attempts to produce the “best” exemplar of [u] that he has heard. Crucially, “best” in this context means *most likely to be categorized as [u]*. This statistic, Pierrehumbert claims, comes from the exemplar’s summed similarity to other exemplars of [u] taken as a fraction of its summed similarity to exemplars of all vowels. Now the other members of the vowel system become critical. As a test case, consider a five-vowel system of /i, e, a, o, u/. In this vowel space, [u]’s only close neighbor is [o]. There are no vowels higher or more back than [u], and [i] is distinguished from [u] by its lack of rounding in addition to its frontness. Because of the structure of the system, the best exemplars of [u] according to the rubric would in fact be closer to the edge of the vowel space than the mean exemplar of the [u] category, because these exemplars would be least confusable with [o]. Blevins translates this perceptual effect to production by stipulating that speakers try to produce the best exemplar of a given category. This feedback loop of perception and production has the effect of distributing vowels evenly throughout the perceptual space, because the system will reach equilibrium only when the best exemplar of each category is also its mean.

Since [u] is closer in the perceptual space to [o] than it is to [i], this type of mechanism can easily model how /u/ would *begin* to front. One would in fact expect this fronting to happen in every vowel system in which [i] is not the nearest neighbor to [u]. This may explain why /u/ exhibits some degree of fronting in a wide variety of languages and dialects. More problematic, and indeed impossible to explain using solely the “best exemplar” theory of sound change, is ascertaining why /u/ would front all the way to [y] rather than stopping at the point maximally distant from both [i] and [o].

The model runs into the same problem when explaining the intermediate steps of a push chain, because such shifts would require encroachment. In other words, because vowels must always move away from one another in this model, it cannot account for situations in which /o:/ raises (almost) to [u:] prior to the fronting of /u:/ to [y:], but it *can* account for situations in which /u:/ fronts and then /o:/ later raises. Blevins unequivocally states that “it is the earlier shift of *u:* > *y:* which allows [u:] to be a potentially better exemplar of /o:/ than [o:] itself” (p. 288). This seems to predict that no chains with the same steps but opposite chronological sequence would occur. Chains involving /u/-fronting and /o/-raising are actually quite common, appearing so frequently in the world’s languages that Labov (1994) treats them as a distinct category (his “Pattern III”). Though the literature typically calls these rephonologizations “push chains,” they clearly constitute drag chains if they occurred in the order for which Blevins has an explanation. Only establishing chronologies for these shifts through independent means can tell us whether they confirm Blevins’ implicit prediction or not (see Samuels 2006). If the prediction is correct and /u/-fronting always precedes /o/-raising where it occurs, as long as there is some other way to spell out why /u/ fronts all the way to /y/, Labov’s Pattern III shifts can be explained.

Though I have highlighted some of the shortcomings of the EP approach here, I feel it represents an important contribution to the field, one that bridges the synchronic and diachronic admirably. The book is lucidly written, well

organized, and clear in its aims. EP follows in the tradition of classic work in the field, but it is different enough from previous approaches — especially OT, the current favorite — to warrant further refinement and scrutiny. Much could be gained from pursuing this line of research. If Blevins is correct that markedness should not be represented in the competence system, this would have far-reaching consequences for synchronic phonological theory. This is an empirically testable hypothesis: To the extent that markedness-based accounts of phonological phenomena can be explained otherwise, EP finds support. Similarly, the status of processes like final voicing is critical here; whether they are impossible or just vanishingly rare makes all the difference for the theory. Surely the last word on all these matters remains to be said, but EP provides a fine place from which to start the dialogue.

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