

Brian MacWhinney, Can phonology be cognitive? Review of Jonathan Kaye, (1989) *Phonology: A cognitive view*. *Contemporary Psychology*, 36, 503-504.

According to Noam Chomsky, generative linguistics is a part of cognitive psychology. However, the directionality of this influence has not always been symmetrical. We often see well-recognized linguists chiding psychologists for not taking the results of linguistic analysis more seriously. It is far less common to find theoretical linguists either using the data of experimental psychology in their theories or conducting experiments themselves. This book by Jonathan Kaye is within this tradition. The title promises a cognitive approach, and the preface states explicitly that within linguistics itself, evidence supporting a given theoretical position is no longer limited to internal data of the sort provided by linguistic analyses of given system. Issues such as parsing, learnability, child language acquisition, and aphasia form a significant part of the grist for the linguist's mill. Such issues are raised throughout this work and should make clear what I mean by a cognitive orientation. (p. xi)

Despite the label on the package, the reader should not expect to find the promised exploration of the cognitive bases of phonology in this book. In fact, there is virtually no discussion of parsing, aphasia, or child language acquisition data. The views of phonologists such as Bybee, Ferguson, Labov, or Ohala who have created substantive links with cognitive psychology are entirely ignored. The issue of learnability is handled by invoking the standard Chomskyan view that language structure can be characterized as a set of parameters for which the child must simply learn to set the proper values. However, no data is provided to indicate that this is really what happens.

Although this book fails to live up to its title, it does an excellent job along two other dimensions. First, it nicely summarizes the reasons why phonologists rejected the sound pattern of English (SPE) theory of Chomsky and Halle (1968). Second, and more importantly, it serves as an easily read introduction to the newer theory of autosegmental phonology.

The first half of the book focuses on the demise of the SPE theory of generative phonology. Kaye begins his exposition by presenting the two fundamental claims that "phonological processes involve only natural classes" (p. 35) and that "each morpheme has a unique lexical representation" (p. 36). The first claim is important but uncontroversial. The second claim is much more problematic. Failure to explore the possibility that morphemes have distributed or nonunique representations has continually impeded attempts to build serious bridges between psychology and generative phonology (Stemberger & MacWhinney, 1988). It has forced linguists into postulating levels of phonological structure the sole purpose of which is the merger of differing lexical forms into a single abstract representation. Remarkably, neither linguistic nor cognitive evidence are presented to support this problematic claim.

The more important part of this book is the second half, which deals with the newer theory of autosegmental phonology. As Levelt (1989) showed, autosegmental phonology has important consequences for the psychological theory of speech production. Unlike the early generative theory, autosegmental phonology seems amenable to a variety of interesting psychological approaches, including information integration, parallel distributed processing, and learnability analyses. Kaye does not pursue these links, but he presents enough detail regarding autosegmental phonology to allow the psycholinguist to begin to consider the empirical consequences of the theory. His exposition is historical. He first shows how the analysis of phonological patterns involving syllables and tones forced phonologists to depart from the SPE framework in the late 1970s. Instead of thinking of words as unidimensional linear strings of sound segments, phonologists began to imagine them as pieced together from information on a variety of levels or tiers. As this thinking developed, phonologists began to add the concept of a timing "skeleton" that would serve as the backbone for the integration of syllabic information, tonal information, and segmental information. The consequences of this model for psychological processing analyses are exciting. Recent studies by Elman (1990) and MacWhinney, Leinbach, Taraban, and McDonald (1989) suggest different ways in which a time-oriented skeleton can influence phonological processing.

The new view of phonological structure also has interesting consequences for language acquisition. For example, Kaye notes that only three parameters are necessary to characterize the possible forms that syllables can assume. According to this view, all the child has to learn to acquire the correct syllabic form for language is how to set the correct value for each of these three parameters.

There are surely other interesting consequences of the new autosegmental theory of phonology for cognitive science. Although Kaye does not explore these consequences, psychologists interested in language processing will find his presentation lucid enough to stimulate thinking about possible links between phonology and cognitive science.

References

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