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# Phonology and The Brain

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## Abstract

Originally published in Contemporary Psychology: APA Review of Books, 1990, Vol 35(5), 475-476. Reviews the book, Phonological Processes and Brain Mechanisms by Harry A. Whitaker (Ed.) (1988). This collection of articles begins with a more speculative endeavor that attempts to relate phonological processes and brain mechanisms. In this article, Sussman presents a neuronal model to account for phonological development in language acquisition. He begins by providing a review of two recent findings in neurobiology: First, single-neuron recording studies suggest that the auditory system in bats functions by simultaneously making use of frequency, amplitude, and temporal information. Second, regressive neurogenesis in which there is a degeneration and systematic elimination of unused synaptic connections is shown to be a pervasive mechanism in neuronal development. (PsycINFO Database Record (c) 2006 APA, all rights reserved)

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However, human phonology is crucially different from birdsong phonology because of its connection to human morphosyntax, which is a semantically compositional or “lexical” syntax in the sense of Marler (1998). Thus, a bird brain may not be truly language-ready, but may still provide an excellent model for understanding components of human speech and the constraints that shaped the evolution of the human language faculty.

2. Vocal Learning. There is some experimental evidence concerning what areas of the brain control birdsong structure. Kao and Brainard (2006) found that inducing lesions in the LMAN of zebra finches reduces variability in syllable structure, which is normally greater in male birds' undirected singing than it is in their singing to females. Phonology is a branch of linguistics that studies how languages or dialects systematically organize their sounds (or signs, in sign languages). The term also refers to the sound system of any particular language variety. At one time, the study of phonology only related to the study of the systems of phonemes in spoken languages. Now it may relate to. (a) any linguistic analysis either at a level beneath the word (including syllable, onset and rime, articulatory gestures, articulatory features, mora ...and the vision that was planted in my brain still remains, within the sound of silence. (Simon and Garfunkel, *The sound of silence* 1964). Sound is made of waves. One fundamental trick of speech is that it surfs those waves by slicing them up into discrete bits. Recently, Mesgarani et al. For further Reading on phonemes, distinctive features and phonology see: Marc van Oostendorp; Colin J. Ewen; Elizabeth V. Hume; Keren Rice (Eds).2011. *The Blackwell Companion to Phonology*, 5 Volumes, Oxford: Blackwell Publishing Ltd. Especially: Chapter 11: “The Phoneme” by Elan Dresher pp. 241-266, and Chapter 17: “Distinctive Features”, by Jeff Mielke pp. 391-415. ↔. Jakobson, R. (1941) *Kindersprache, Aphasie, une allgemeine Lautgesetze*. Uppsala: Almqvist & Wiksell. Novice or not, here's a tip to learn Phonology effectively. Study Phonology lessons with smart digital flashcards and retain what you've learned! Browse over 1 million classes created by top students, professors, publishers, and experts, spanning the world's body of "learnable" knowledge.