



Speech's reptilian origins

Human Language and Our Reptilian Brain: The Subcortical Bases of Speech, Syntax, and Thought

PHILIP LIEBERMAN

CAMBRIDGE, MA: HARVARD UNIVERSITY PRESS; 2002; Pb £13.50 (ISBN 0 674 00226)

REVIEWED BY Fiona Lyddy

PHILIP Lieberman's central thesis is that the neural mechanisms that enable human language and cognition evolved by Darwinian processes from mechanisms adapted for motor control. This view, similarly expounded in Lieberman's other books, argues that language has a long evolutionary history and is neurally integrated with nonlinguistic and motor capacities. Chomsky's nativism, Fodorian modularity and algorithmic (symbolic/sequential) accounts of language are summarily rejected.

Lieberman argues that language is not an instinct but a learned skill enabled by a distributed parallel network involving many brain structures – the functional language

system (FLS). The focus is shifted from the neocortex to deep subcortical structures of which the basal ganglia, structures with reptilian origins, are particularly implicated. The FLS, though uniquely human, derives from neural structures that regulate motor control. Thus 'ultimately, human linguistic and cognitive ability can be traced back to the learned motor responses of mollusks'. For Lieberman, language's key feature is speech, not syntax; lexical and syntactic abilities have simpler parallels in apes, but speech reflects species-specific facets of the human brain. Understanding speech's origins is the key to the evolution of language.

A brief introductory chapter sets out

the key arguments and a chapter overviews brain anatomy. Subsequent chapters consider the physiology of speech production and perception and the relationship between them; the lexicon, emphasising the integration of linguistic and nonlinguistic knowledge; the role of the subcortical basal ganglia in the integration of sensory and linguistic information and in syntax; and the evolution by Darwinian processes of the FLS. A closing commentary reviews Lieberman's position.

The book benefits from an accessible and lively style and provides an excellent account of subcortical involvement in language, although neocortical influence is neglected here. While acknowledging that the anatomy and physiology of the FLS remain unspecified, Lieberman does not temper his criticisms of opposing views. The FLS account, while enlightening, remains speculative.

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The self-ish synapse

Synaptic Self: How Our Brains Become Who We Are

JOSEPH LEDOUX

LONDON: PAN MACMILLAN; 2002; Hb £20.00 (ISBN 0 333 781872)

REVIEWED BY Sean Commins

JOSEPH LeDoux is a highly respected neuroscientist who has contributed considerably to our understanding of the circuits involved in emotion, particularly with his work on the role of the amygdala in fear conditioning. *Synaptic Self* is a well-written and fascinating book that will interest undergraduates and postgraduate students alike. LeDoux argues that what makes us who we are (the self) is a function of the interaction between neurons. This interaction occurs at the gap between neurons (the synapse) and allows us to feel, to think, to remember, to act and to make decisions.

LeDoux starts by trying to define the self and looks to theories of self in philosophy and psychology. He argues that the self is in part made and maintained by memories. We must remember who we are, we have particular habits that are remembered, and so on. Following a brief description of the different types of memory, he suggests that memories are formed and maintained at the synapse. The interaction

between neurons is dynamic, but more importantly is modifiable, ever changing with learning and experience. He describes how changes occur at the synapse with particular reference to the current biological models of synaptic plasticity (long-term potentiation), relating these changes to learning and memory.

But the self is only in part made by memories; we are also made of feelings, thoughts and actions. These features can also be attributable to the interaction between neurons and the interaction between different brain circuits. For example, memories can be strengthened and modulated by emotions via the amygdala. The amygdala can also influence what is brought to our working memory and attention, thereby directly affecting our actions. LeDoux also describes how synapses can break down through mental illness, and suggests ways in which disorders can be treated. Finally he concludes that in a sense, you are your synapses.

■ Dr Sean Commins is at the National University of Ireland, Maynooth.

Classification and Diagnosis of Psychological Abnormality

SUSAN CAVE

HOVE: ROUTLEDGE; 2002; Pb £8.99 (ISBN 0 41523 102 7)

REVIEWED BY Carol Ireland

SUSAN Cave cleverly crams a complex area into a pocket-sized companion, providing background for those just starting their psychology studies. The case studies she uses to illustrate and progress exercises to check understanding are particularly helpful. However, such an abridged presentation does have unavoidable costs, as information and concepts can become oversimplified. Also, the book's occasional tendency not to cite the original authors of studies makes further reading difficult. But the use of sample essays and accompanying examiners' comments are excellent. I can recommend this book to students as a useful study aid.

■ Dr Carol Ireland is with Ashworth Hospital.