COGNITIVE SCIENCE Vol 23 (4) 1999, p. 415 ISSN 0364-0213

Preface

This Special Issue appraises the progress made so far and the prospects for future development of connectionist models of natural language processing. This project is timely—the decade since the publication of David Rumelhart and Jay McClelland's influential PDP volumes has seen an explosive growth of connectionist modeling of natural language, ranging from models of early speech perception, to syntax and to reading phenomena. The breadth and variety of this work is illustrated in the review by Morten Christiansen and Nick Chater, which forms the introductory paper in the volume.

How much has been achieved by this vast research effort? Part I, *Progress*, presents some of the most recent progress by leading connectionist researchers, in a range of topics of central interest in language processing. Gareth Gaskell and William Marslen–Wilson describe recent developments in connectionist models of speech perception. Kim Plunkett and Patrick Juola report on progress in the highly controversial area of connectionist models of morphology. Whitney Tabor and Michael Tanenhaus describe their work utilizing recurrent networks to model parsing within a dynamic perspective. Gary Dell, Franklin Chang, and Zenzi Griffin provide accounts of lexical and syntactic aspects of language production. David Plaut outlines recent developments in connectionist models of reading.

Where Part I brings us to the forefront of current connectionist modeling of natural language processing, Part II, *Prospects*, considers the prospects for future research. Mark Seidenberg and Maryellen MacDonald argue that connectionism provides a fundamentally new way of looking at language processing and acquisition, which challenges traditional viewpoints derived from linguistics. By contrast, Paul Smolensky attempts to synthesize lessons learned from both linguistics and connectionist research, arguing that progress will come from providing an integration of the two approaches. Mark Steedman takes on the role as an "outside" observer, seeking to put connectionist natural language processing in perspective.

Connectionist modeling has had a vast impact throughout cognitive science, and has been both most productive and most controversial in the area of natural language processing and acquisition. This issue can be used as an overview of the "state of the art" in connectionist models of natural language processing. But more important, it also serves as a contribution to the current research effort in this area, and, we hope, as a stimulus to informed debate concerning future research on human language processing.

Morten H. Christiansen
Department of Psychology, Southern Illinois University
Nick Chater
Department of Psychology, University of Warwick
Mark S. Seidenberg
Program in Neural, Informational and Behavioral Sciences, University of Southern California