SCIENCE
Cognitive Neuroscience
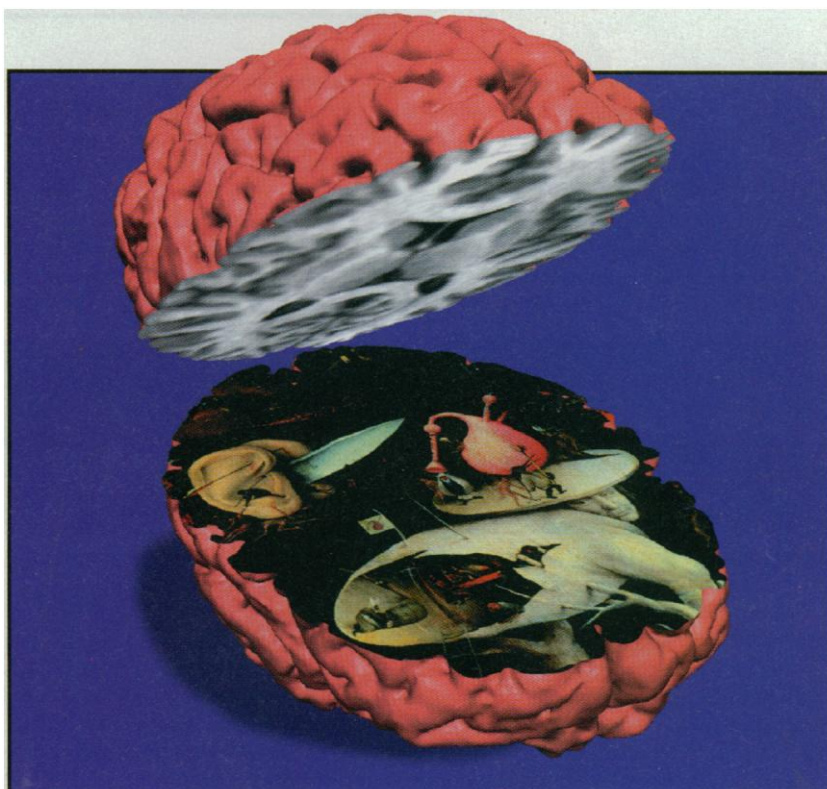
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Three hundred years ago, the French philosopher René Descartes gained immortality with his pronouncement, "I think, therefore I am." Today, a disparate band of researchers—physicians, psychologists, and neurobiologists—is asking the next question: How do we think? This special issue of *Science* surveys how they are trying to provide an answer by fusing the perspectives of their formerly separate disciplines.

In her Article, N. C. Andreasen discusses approaches to understanding schizophrenia as a dysfunction of specific cognitive systems, such as those for working memory and consciousness. The normal underpinnings of working memory and consciousness are also coming to light, as two stories in the Special News Section make clear. (For interactive demonstrations of behavioral paradigms used to study working memory, reconstructive memory, and visual-spatial attention, see J. D. Cohen's Web site at http://psyscope.psy.cmu.edu/cogdemos/welcome.html) In another Article, W. Schultz and his colleagues examine the neural basis of animals' ability to predict future events, an essential survival skill for finding food and mates and avoiding danger. They report that neurophysiological studies of primates, buttressed by computer modeling of neuronal behavior, have revealed the importance of a particular set of dopamine-releasing neurons.

The final pair of Articles describes two efforts to tackle that peculiarly human attribute—language. M. S. Seidenberg reviews the classic paradigm of Noam Chomsky that focuses on innate capabilities for language acquisition and processing, then suggests an alternative based on connectionist theories that attempt to explain learning as alterations in neuronal networks. And A. Prince and P. Smolensky review how optimization, a formal organizing principle derived from neural computation, can characterize grammar as a hierarchy of linguistic constraints. The satisfaction of a single set of constraints appears to resolve well-known inconsistencies between listening and speaking abilities when learning language.

–Gilbert J. Chin and Jean Marx