New book reintegrates the science of language

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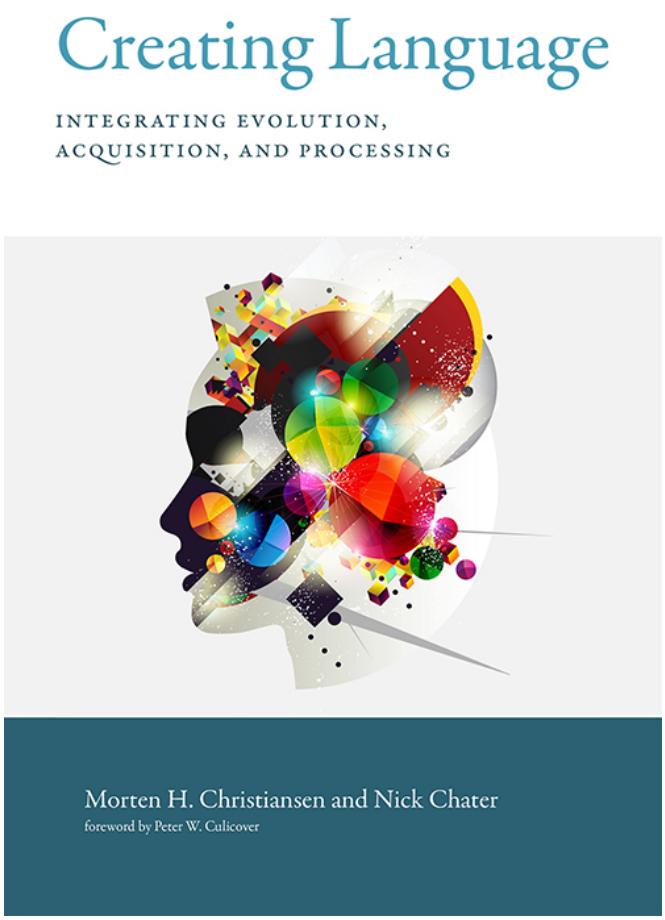

Is language innate? How did we get language?

A new book offers a revolutionary, unifying framework to understand the processing, acquisition and evolution of language. "Creating Language: Integrating Evolution, Acquisition, and Processing" by Morten H. Christiansen, Cornell professor of psychology, and Nick Chater (University of Warwick, U.K.), integrates recent findings across numerous disciplines, including psychology, linguistics, computer science, anthropology, cognitive science and cognitive neuroscience.

Christiansen and Chater's integrative approach offers a way of understanding language across the timescale of thousands of years, over which languages themselves evolve; the timescale of years, over which children acquire the language of their community; and the timescale of seconds, in which particular utterances are spoken and understood.

"There's been a trend toward separating out questions relating to the evolution, acquisition and processing of language from one another, losing sight of the overall picture," Christiansen says. "You need to look at these different aspects of language in combination."

Because children learn language quickly and easily, many theorists have believed this means there are specialized brain mechanisms specific to language acquisition. This has led them to ask how the brain has changed to accommodate language. Christiansen and Chater flip the question around, asking, "Why is language so well suited to being learned by the brain?" Taking a cultural evolution approach, they conclude language is easy for us to learn and use because language, like a living organism, has evolved in a symbiotic relationship with humans. Language has adapted to what our brains can do, rather than the other way around.

At first, it might seem that language changes too slowly to affect language acquisition but, as the book details, the language we use changes all the time – even the way we sound changes over time. This means language learning never ends but continues throughout life.

Given such life-long language learning, say the authors, individual variations in exposure to language contribute to differences in the processing

of language and the difficulties people have with certain linguistic constructions. Christiansen notes that even among the otherwise well-spoken Cornell students there are considerable differences in their language processing skills: by using experience-based processing short-cuts, some are faster and more accurate in their comprehension than others.

The book places individual differences in linguistic abilities in an evolutionary context.

"We view language as piggy-backing on older pre-linguistic abilities," Christiansen says. "Results from my lab indicate that there's likely to be some biological differences in how people are able to process sequences of information and 'chunk' that information together into larger units. These differences interact with variation in linguistic experience and give rise to individual differences in language processing. The importance of experience is further underscored by the many studies showing that there's a strong correlation between the number and variety of words that children hear and their language abilities. It can make a huge difference."

"Creating Language" is the culmination of nearly two decades of work. Although the book is a scholarly work, the authors want to reach the general public. To that end, Christiansen solicited feedback from his students at Cornell, which helped make the text accessible.

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