Reviews
Comptes rendus

Editors' note: We are happy to present here two rather different, but complementary, reviews of Christiansen and Chater's *Creating language: Integrating evolution, acquisition, and processing*. The book addresses questions that have been the subject of significant debate in the field in recent years, and we hope that these two reviews contribute to a constructive and rigorous conversation among our colleagues. We should mention that the two reviews were written independently. Neither should be taken as a response to the other review; rather, each represents its author's response to the book itself.

Morten H. Christiansen and Nick Chater. 2016. *Creating language: Integrating evolution, acquisition, and processing*. Cambridge, MA: MIT Press. Pp. xiv + 330. US $40 (hardcover).

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The capacity for language is undoubtedly the most prominent characteristic that makes humans unique in the world of biology. The intrigue behind the questions *how do humans acquire language?* and *is language innate?* has held for decades and continues to receive theoretical thrust from a variety of frameworks rooted in the biological and social sciences as well as from the humanities. In *Creating language: Integrating evolution, acquisition, and processing*, authors Christiansen and Chater bring to light a new and fresh outlook on understanding language evolution alongside language acquisition and processing.

Contrary to the traditional Chomskyan view that humans are hardwired to acquire language, Christiansen and Chater argue that, when it comes to language creation, it is language itself which has evolved around multiple constraints on human learning and processing. Under this assumption, the authors offer an integrated theory of language creation which is interrelated across multiple timescales: from the shortest of moments in which language is produced and interpreted to longer periods of years in which knowledge about language is shaped across the lifespan or of generations in which language has evolved into what it is today.

The book opens with a foreword by distinguished scholar Peter W. Culicover. The foreword serves to introduce contemporary research on language against the backdrop of Noam Chomsky's work. At the end of the foreword, Culicover offers

some words of endorsement for Christiansen and Chater's book: "If [the authors] are on the right track (and I think they are about many things), they will have shed light on some mysteries about why language have certain properties and how language gets into our heads" (p. ix). After this brief foreword, a preface by the authors details how *Creating language* came about from over twenty years of collaboration between them.

The book continues with eight chapters which are equally divided across two parts. Part I explores the theoretical and empirical foundations on which the authors base their claims throughout the book. In the introductory chapter, "Language created across multiple timescales", the authors describe the complexity of language through three timescales of language creation: "the timescale of seconds at which we create language by producing and interpreting utterances; the timescale of tens of years during which we create our knowledge of language in acquisition and update it across our lifespan; and the timescale of perhaps a hundred thousand years or more over which language was created in the human lineage and evolved into its current form" (p. 4). This construction-based approach to language highlights the importance of the interdependencies between processing, acquisition, and evolution of language. In Chapter 2, "Language as shaped by the brain", Christiansen and Chater argue that generative and UG approaches which posit a biological predisposition for abstract linguistic constraints can be largely challenged based on evolutionary grounds, specifically processes of cultural evolution shaped by the brain. In other words, language learnability and usage have evolved in an interdependent way among humans and has adapted to the abilities of the human brain.

In Chapter 3, "Language acquisition meets language evolution", the authors dig deeper into cultural evolutionary implications to explain language acquisition. Chapter 4, "The now-or-never processing bottleneck", discusses the constraints that the real-time nature of language has on explanations of language acquisition and evolution. Because language occurs in the "here-and-now," Christiansen and Chater provide explanations (e.g., Chunk-and-Pass strategy) that help to support their argument that language acquisition involves learning to process linguistic structure instead of inducing a grammar. Unfortunately, many of these explanations could also be elucidated by generative accounts which the authors fail to report (see Fasanella and Fortuny 2016, for recent generative approaches to chunking). In fact, fully explaining and contrasting UG and generative approaches to modelling grammar is perhaps a missed opportunity which Christiansen and Chater should have taken, in order to provide more traction to their arguments. Nonetheless, the authors are successful at bringing to light this fruitful area of research incorporating numerous perspectives useful for future work.

Part II transitions to discussing the implications of the integrated theoretical framework exposed in Part I. Chapter 5, "Language acquisition through multiple-cue integration", focuses on the authors' assumption that pre-existing neural constraints make available several information sources for language acquisition and use. Christiansen and Chater present an extended case study which demonstrates that cultural evolution has shaped languages to depend on multiple information sources. In Chapter 6, "Experience-based language processing", the authors highlight

the richness and importance of input through an experience-based approach to language acquisition and use. They use relative clause processing to exemplify how individual language experiences can explain variation in language processing.

Chapter 7, "Recursion as a usage-based skill", continues the discussion on experience-based language processing by arguing that complex language structures emerge gradually. Employing a usage-based approach, Christiansen and Chater examine recursive sentence processing, and conclude that recursion is an acquired linguistic processing skill. In Chapter 8, "From fragmentation to integration", the authors emphasize a need for future work which eliminates the theoretical distinctions traditionally held in generative linguistics such as competence vs. performance, language acquisition vs. skill acquisition, and language evolution vs. language change. They conclude by making their "final arguments" as to how their unified account of human language can explain some of these apparent distinctions.

Creating language is the result of the culmination of nearly two decades of research which the authors have reworked to collectively produce a book-length analysis, but unfortunately, their project may have had a limited degree of success. While the authors have clearly made efforts to fit together these rewritten works, the reader may sense a far stretch from their contribution to a coherent thesis. Perhaps the "illustrative" boxes which are spread throughout the book (usually three per chapter) provide an example of the disconnect within and across chapters. One would assume that these boxes are intended to supplement and certainly relate to the text around which they appear. However, the reader may feel that some of the boxes actually distract from the main text and fail to fully tie themselves to it, making for an awkward fit. While these supplemental boxes present interesting topics (e.g., the possibility of a minimal UG; language evolution and computational modelling; information transfer across languages), it may have been more effective to have created a closer connection with the text's discourse.

Christiansen and Chater cover a wide range of issues and their coverage of the review of literature over the last 20 or so years is impressive. Their book adds to the age-old, yet growing debate on the evolution of language. Through their usage-based and unified approach to language acquisition, processes, and evolution, the authors, somewhat controversially, conclude that language is adapted to the brain rather than vice versa. *Creating language* is a recommended resource for anyone wishing to understand how language acquisition and processing constrain each other or for those seeking an alternative to generative approaches.

REFERENCE

Fasanella, Adriana and Jordy Fortuny. 2016. Deriving linguistic variation from learnability conditions: The Chunking Procedure. In *Rethinking parameters*, ed. Luis Eguren, Olga Fernandez-Soriano, and Amaya Mendikoetxea, 105–132. Oxford: Oxford University Press.