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Review
Comptes rendus

Morten H. Christiansen and **Nick Chater**. 2016. *Creating language: Integrating evolution, acquisition, and processing*. Cambridge, MA: MIT Press. Pp. xiv + 330. US\$40.00 (hardcover).

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“How do you get to Carnegie Hall? Practice, practice, practice.” (Anonymous)

According to Christiansen and Chater (2016), a goal of this book is to bring together the study of language evolution, acquisition, and processing. To do this, they argue, it is necessary to move beyond what they call “Chomsky’s hidden legacy” (p. 6), which in their view is responsible for the separation of these fields in the first place. But it is not just Chomsky that they are attempting to transcend, it is the whole of what they call *mainstream linguistics*. A central thesis advanced here, signaled by what is missing from the subtitle, is that evolution, acquisition, and processing can profitably be studied in the absence of an account of grammar. Moreover, the “overarching framework for the language sciences” that they propose jettisons long-held theoretical distinctions such as competence versus performance, acquiring knowledge of language versus learning a skill, and language evolution versus language change.

These radical—and in my view, misguided—proposals are the main subjects of this review. However, I do not want to give the impression that *Creating language* consists entirely of anti-generative polemics. It is divided into two parts, “Theoretical and empirical foundations” and “Implications for the nature of language”. In the first part, the authors present their views on how the three fields in their title (evolution, acquisition, and processing) interact, drawing attention to the vastly different timescales over which they operate. The second part presents the results of research by the authors and their colleagues on aspects of language acquisition and processing, and experiments on learnability. These sections rest on a substantial body of work: by my count, the authors have contributed, either individually or together, to 90 publications in the reference list. These results will be of interest to those who work in these areas, and deserve more discussion. However, the constraints of space compel me to stick to the wider issues.

The authors adhere to the theory that language is a “parasite” (p. 43, a “beneficial” one, thank goodness) that has adapted to our brains over years of cultural evolution: “Language is easy for us to learn and use not because our brains embody knowledge of language, but because *language has adapted to our brains*” (pp. 20–1, emphasis the original text). There is thus no need for separate theories of language evolution and language change, because language evolution is just the result of language change over a long timescale. To illustrate how this evolution might work, the authors discuss learning simulations they ran using connectionist Simple Recurrent Networks that were exposed to miniature languages generated by simple grammars with no fixed word-order constraints. The best-learned languages in each generation were the basis for the languages provided to the next generation. After less than a hundred generations, the resulting language had adopted consistent word order.

Belief in a distinction between language evolution and language change, however, is not “a side-effect of a theoretical position that is no longer tenable” (p. 240), but is based on the empirical observation that language change does not work like the authors’ simulations. If the authors are correct, we should find that every language becomes simpler and easier to learn and use over time. This has not been shown. Apart from cases where a language has undergone simplification in some respect (simplification being a common type of language change), the only examples that the authors adduce in support of their hypothesis are Nicaraguan Sign Language and Al-Sayyid Bedouin Sign Language. But these are not examples of ordinary language change; both have recently developed into full-fledged languages from something less than that. It is telling that the authors do not point to any of the well-documented cases of languages changing over hundreds and even thousands of years. These cases show that languages change, but do not evolve.

In Christiansen and Chater’s account of how children acquire language, there is no reason to posit an innate Universal Grammar (UG) because it is the languages that do all the heavy lifting to overcome the poverty of the stimulus. Thus, languages have evolved to fit the biases, guesses, and non-linguistic constraints that learners bring to bear on language acquisition. The authors discuss some cognitive constraints that apply to language acquisition (notably, processing and memory limitations and the need to hierarchically organize the linguistic input into chunks), but these constraints do not come close to giving us an account of why languages pattern in the exact ways that they do. We are not given a detailed account of learners’ biases and guesses, so it is possible to suspect that *biases* and *guesses* are just terms used to talk about what others would call *UG*.

Christiansen and Chater also wish to abolish the distinction between language learning as the acquisition of a system of (tacit) knowledge and the learning of a skill. They propose that like other skills—juggling, playing the violin, playing chess—learning occurs by practicing, and does not involve the acquisition of a grammar. However, they do not propose a theory of violin learning, for example, that we can transfer to language. In the absence of such a theory, violin playing merely raises the same questions as language acquisition; indeed, music might well depend on, or share in, UG. Or is it more illuminating to say that violin concertos have adapted over the centuries to the motions that violin players tend to make?

Christiansen and Chater propose that the “Now-or-Never processing bottleneck” (pp. 93–133)—that is, the need to process language quickly in real time—is responsible for shaping some basic characteristics of language. I note that mainstream linguistics has also recognized this basic fact of language use. While the authors present a number of interesting results dealing with particular processing issues, they tend to use the verb *process* without an object, as in “*language acquisition is nothing more than learning to process*” (p. 114, emphasis in the original text). In a number of passages they suggest that grammar does not exist; what linguists call *grammar* is just individual processing histories, or the merging of item-based procedures for chunking. But elsewhere, they allude to “linguistic representations” (p. 119) and are willing to incorporate various non-Chomskyan theories of grammar (Construction Grammar, Generalized Phrase Structure Grammar, and others) into their framework.

This vacillation arises again in the authors’ argument that recursion is not a fundamental property of language. They observe that a language can give the appearance of recursion without actually having any general recursive rule schemas. For example, for complex cross-dependency

recursion as found in Dutch, they suggest rules like in (1), but they do not try to show that Dutch actually has these rules, so it is not clear what their status is in their framework.

- (1) a. $S \rightarrow N_1 N_2 V_{1(t|o)} V_{2(i)}$ c. $S \rightarrow N_1 N_2 N_3 V_{1(t|o)} V_{2(t|o)} V_{3(i)}$
 b. $S \rightarrow N_1 N_2 N V_{1(t|o)} V_{2(t|o)}$ d. $S \rightarrow N_1 N_2 N_3 N V_{1(t|o)} V_{2(t|o)} V_{3(t|o)}$

Recursion is also the subject of their commentary on Fodor's (1975) discussion of (2a).

- (2) a. Bulldogs bulldogs bulldogs fight fight fight.
 b. [bulldogs [bulldogs [bulldogs fight] fight] fight]
 c. Bulldogs, that cats that people buy are afraid of, like to fight.

Fodor (1975: 168) remarks that "advanced students" can work on hearing (2a) as a sentence with the structure (2b), rather than a Yale cheer. Christiansen and Chater propose that sentences like (2a) on the centre-embedded analysis are not part of English at all, but are "theoretically-guided extensions of the language". Theories of language structure, they assert, "should focus on sentences people actually use" (p. 234).

This appeal to populism might be in tune with the zeitgeist, but is out of place in a discussion of scientific theories; I doubt that it is consistent with the authors' own practice. Christiansen and Chater miss the point: one does not have to go out of one's way to assign (2a) the analysis in (2b); the challenge is to *exclude* this analysis from a theory of English that includes sentences with similar structures, like (2c). However, to investigate this issue in any depth it is necessary to study syntax in more detail than the authors do in this book.

Jerry Fodor wrote insightfully on language processing, acquisition, and evolution, among other topics. Contrary to the caricature of generative linguistics presented in *Creating language*, he did not drive a wedge between grammar and these areas. Just the opposite. The lesson he drew from (2a) was that if one wants to know what representation a subject will assign to a sentence, one has to know something about the kinds of computational procedures the subject has available. But he also wrote (Fodor 1975: 163): "if you want to know what response a given stimulus is going to elicit, you must find out what internal representation the organism assigns to the stimulus." A project to unify the language sciences that does not assign an important place to representations, and to the grammars that generate them, is unlikely to succeed.

REFERENCE

Fodor, Jerry A. 1975. *The language of thought*. Cambridge, MA: Harvard University Press.