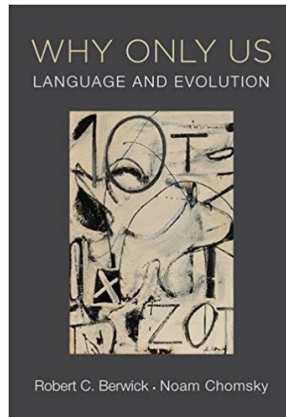# Language, food for thought?

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Why only us

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ISBN 9780262034241

The big question

Even with the recent rise of anti-specist movements, it is hard for most people not to think of humans as significantly different from other animals. Yet each scientific discovery since Darwin's *Origin of species* narrows the gap between us and non-human animals: Darwin discovered that all animals evolved from a common ancestor following mechanisms such as natural selection; humans share 50% of their DNA with bananas and up to 99% of common genes with apes, our closest relative; reports argue that chimpanzees have entered the stone age and are thereby making, using and sharing knowledge about tools, something we thought only the humans being capable of; on a similar note, three australian bird species (the Black Kite, Whistling Kite, and Brown Falcon) have recently made the headlines as they appear to intentionally start fires to hunt on preys; lastly most non-human animals have been shown to be sentient and to have emotions in a similar way as humans do. Is there then anything left that radically differentiates us from other animals? What about language? Noam Chomsky is famous for proposing that language in humans is an innate faculty and that infants are *hardwired* to learn languages. In this book, Berwick and Chomsky go a step further and discuss through four interdisciplinary chapters *why only us* possess language.

The authors make five main arguments: 1) Language is defined by basic property: "a finite computational system yielding an infinity of expressions, each of which has a definite interpretation in semantic-pragmatic and sensorimotor systems", as they describe it, which they say is not present in other animals. 2) Sometime between 200 000 years and 80 000 years ago, a genetic modification radically changed human's cognitive organisation and provided them with the basic property of language, which they call Merge. 3) Merge is a set forma-

tion operation: take X,Y two syntactic object, Merge forms a new, hierarchically structured object {X,Y}. 4) Language is structured hierchically. 5) Language evolved from thought, not as a communicative tool, making the difference between E-language (external) produced by the sensorimotor system and I-language taking place in the mind, which differentiates human language from other communicative tools of other animals. They go against the general consensus in linguistic, but are true to Chomsky's earliest theories of language.

When, where, who, how, more than why

To tackle these arguments, Berwick and Chomsky take us at the crossroad of biology, statistics, theory of computation, neuroscience and linguistics, addressing issues and caveats in each fields. Because of this, the reading can be quite challenging at some point or another, even with strong knowledge in linguistics. They divided their argumentation into five subtopics or questions, taking the form of a *whodunit*: not only why do we have language, but also when did it appear, where, who possesses the faculty and how does it work.

In fact, I had the feeling that most of the second half of the book was dedicated into answering the *how* question, through advocating the Strong Minimalist Thesis (SMT) and the fundamentally hierarchical structure of language, compared to other models and theories. More on this point in the next section. The question *where* and *when* are quickly and superficially addressed, mainly due to inherent limitations of research paleoanthropology, and are largely based on speculations. As for *why* the authors give away the plot in the first pages of the book, and spend most of the first half presenting the assumptions necessary for their argument.

They discuss, for example, the general assumption that evolution takes place in very small, incremental changes. This does not seem to work in the case of language, as there appears to be no trace of any *proto-language* either in our ancestry or other animals. In fact it appears that evolutionary advantageous mutations greatly risk to be diluted in a stochastic ocean, such that the ones passing their genes might not be the most fit but simply the luckiest, assuming they have any descendance at all. In that sense, a gene must be shared by a critical population size before it can effectively induce evolution. Therefore, evolution is composed of big bounces. The illustration given is the case of small changes in neuron organisation that can lead in radical changes in cognition. This example shows that a basic knowledge in biology and statistics, on top of linguistics, is often necessary to properly understand some sections.

When it comes to *who*, the book presents an interesting overview of the literature regarding the faculty of language of other animals and human species. The authors show that none possesses either recursion, essential to the language faculty according to them (though it is debatable, see Parker, 2006), or symbolic activity. Curiously, they omit to mention the case of dolphins, which have, in fact, been found to be capable of processing semantic and syntactic information (Herman, 2002; Schusterman & Gisiner 1988; Janik 2003; Herman & Forestell, 1985), which goes against the point they are trying to make. Unfortunately, this is not the only convenient omission of challenging evidence.

A MERCHANDISE PRODUCT

As shortly touched upon earlier, a big part of the book is dedicated to arguing for Merge. So much that half way through it, I had the feeling that I was being sold a product. This is exacerbated by the fact that the authors bully other researchers by claiming that their widely accepted theories are either incorrect or plainly wrong, while on the other hand, they offer little support for their own theory besides insisting that there is plenty of empirical evidence from many cross-disciplinary fields like biolinguistics (which is *of course* based on the principle of a genetic mutation at the origin of language). More than this, the book appears to be a big communication campaign to support Chomsky's vision of linguistics, which is nowadays a minority. They keep referring to the evolution and progresses of generativism, insisting on how successful it has been, and dismissing contradicting evidence.

A CHICKEN AND EGG PROBLEM

Needless to say that this book is controversial. As new discoveries in linguistics have been made, it appears that most of what we thought of being language specific also take place in other processes, such as pattern recognition or statistical learning. Chomsky and Berwick nevertheless hold on to it and brandish Merge as the foundation feature of both (I-)language and thought, for they claim that Merge allowed humans to process long chains of thoughts, and acquire symbolic meaning and hierarchical representations. In fact, The authors spend a substantial part of the book postulating why language *has* to be hierarchical, as opposed to linear, and Merge *is* the most appropriate model to map language. From that perspective, it would also mean that we are the only species to have complex thoughts, which seems hard to demonstrate. However, one could imagine that the contrary happened, namely that the hierarchical structure of thought shaped the way we use language.

AN IMPORTANT BOOK

Regardless of your opinion on Generativism or the work of Chomsky, I encourage every linguist to read this book. Although highly speculative, the authors raise interesting topics which stimulate the debate and are inspiring. But its most relevant feature to me is its interdisciplinary approach, which can make it challenging to read at times but helps the reader get a sense of the bigger picture. I personally learned a lot about the theory of evolution, biology in general and paleoanthropology, and got me excited about my own field. In the end, *Why only us* ask the fundamental questions of who we are and how different are we from the other animals. Whether they provide the right answer is almost secondary. ∎

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