

Book Review

How Homo Became Sapiens: On the Evolution of Thinking by Peter Gärdenfors.
Oxford University Press, 2003.

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In *How Homo Became Sapiens*, Peter Gärdenfors, a cognitive scientist at Lund University, presents his theory of how human thinking emerged. According to Gärdenfors, evolution is the main culprit, and he sets out to convince Egon, a talking monkey with an argumentative personality, why he would be right to think so.

The book, however, is no monkey business. The main thesis is that the emergence of a rich inner world provided man with an increasing number of cognitive faculties that now characterize human thinking (e.g., self-consciousness, language). The viewpoint taken is mostly that of a philosopher - setting distinctions and levels is a constant throughout the book as Gärdenfors is ready to admit that “making distinctions is a philosopher’s occupational disease” (p. 84). Nevertheless, Gärdenfors espouses a naturalistic approach, almost always backing his distinctions with evidence and illustrative examples. In this he proves to be interdisciplinary-minded and tries to include evidence from different disciplines, particularly ethology and (comparative) psychology.

The book is organized around Gärdenfors’ ideas on the sequence of emergence of the different components of thinking, some of which are now the distinctive marks of *Homo sapiens*. The first chapter provides a list of the postulated components of thought that are discussed throughout the book: sensations, attention, emotions, memory, thoughts and imagination, planning, self-consciousness, free will, and language. Also a pervasive theme is Dennett’s four-stage model of the evolution of consciousness, which distinguishes Darwinian, Skinnerian, Popperian, and Gregorian beings. Clearly Gärdenfors tries to lead the reader through the evolutionary path of increasing detachment of representations from the immediate senses, or in his words, “the development of an ever-richer inner world” (p. 2). This path leads the reader to climb up from sensations to each of the other thought components and, finally, to culture. The climb is indeed steep

and the perils, as we shall see, are not negligible.

Chapter 2 presents the first steps in the proposed phylogenetic sequence: sensation, perception, and imagination. Whereas sensation refers to a focus on the here and now granted by the senses, perception amounts to a representation already somewhat detached from sensations, therefore, involving inferences about the world. The latter in turn provides the ground for further detachment of representations in the form of imagination – thinking about stuff that is not there.

Imagination is characteristic of beings that go beyond the present moment and engage in planning for the future. Chapter 3 deals with such creatures, by stressing the “detachment of representations” idea. Gärdenfors critically analyzes seminal work from Dennett and Tomasello and comes up with his own argument about the relation between planning, intentionality, and imitation. Intentionality is defined as having a detached representation of a goal, while imitation is the ability to represent someone’s goal and carry out the necessary steps to accomplish it. Finally, planning is said to require a representation of a goal and a set of complex actions that are not immediately obvious. Thus, the story goes, planning requires intentionality and the ability to imitate.

Chapter 4, clearly one of the best in the book, deals with how planning paved the way for the amazing capacity of reading other people’s minds. Planning is a complex matter—try making a tool out of a pebble and you will soon find out how. But planning seems to have been used during evolutionary time to deal with other breathing, planning creatures, some of which very much like the planner himself. The thesis put forward is a Machiavellian one: having to deal with their conspecifics, some organisms went from possessing an inner world to having theories of emotion and intention, and others, like humans, even a full-blown theory of mind and self-consciousness. The chapter is rich and detailed in the description of studies from comparative and developmental psychology showing these abilities, and the reader is carefully led through the subtle differences between animals’ and children’s causal understanding of others’ and their own actions.

The fifth chapter starts with a distinction, which according to the author, is seldom made: that between consciousness as experience, like feeling joy or pain, and consciousness as reflection, that is, thinking about one’s own experiences (but see Young and Block, 1999 for a further distinction). Gärdenfors is especially interested in the latter given that it represents a further detachment of representation—a second-order thought. He goes on to discuss an interesting issue: does self-consciousness precede a “you-consciousness” (i.e. a theory of somebody else’s mind)? According to the author it does not. Instead, consciousness is supposed to have appeared “through the insight that the members of your species also act intentionally and have inner worlds of their own” (p. 126). This is in fact a compelling idea and it must be noted it adds a twist to the status quo, which basically states that self- and you-consciousness are the two sides of

the same coin. On the other hand, two other promising issues—free will and morality—appear too fragmentary and their discussion ends up neither insightful nor informative.

Chapters 6 and 7 address the emergence and origin of language, respectively. They include topics such as whether animals have a language capacity and the relation between language and thought. Gärdenfors' explanation of why humans are the only animals to have language is that we have a considerably more developed inner world. Supposedly, without a rich inner world one is doomed to fail at using symbols—one can at most make due with signals (i.e. the symbols' less "detached" counterparts). However, Gärdenfors' views on language seem to be less than orthodox. For instance, he writes that Chomsky's idea of an innate language module is challenged by the fact that apes learn language in an artificial setting but not in a natural one. However, a page later he admits that Kanzi, the so-far best communicating bonobo, might have limitations in its linguistic abilities, namely, a failure in learning grammatical structures—the very stuff a language module would be made of. Gärdenfors, however, thinks grammar is overrated—he welcomes instead a focus on communication. This is surely puzzling because the opposite argument can be made: it is language's complexity, obvious in the study of syntax, that argues for an adaptationist explanation (Pinker and Bloom, 1990). Chapter 8 closes the book by looking at humans' highest possible detachment of representation—the (complete) externalizing of the inner world, which came about with the development of writing and culture.

Gärdenfors' book provides a clearly written and engaging text worth recommending to undergraduates in the fields of cognitive science, psychology, and biology as well as to a general audience. Unfortunately, not only "much of the academic material has been banished to footnotes and endnotes" as advertised; there are also some key references that are banned altogether. For instance, in his discussion of what distinguishes sensation and perception, Gärdenfors introduces the concept of simulators that reminds us of Damasio's (1999) as-if loops, which the author fails to mention. Peter Carruthers' (1996) views on the relation between consciousness and language and Susan Blackmore's (1999) work on memes are also not cited, although the topics are discussed.

Overall, the book's strongest points come hand in hand with its weaknesses. First, the author successfully gathers support for his thesis from different scientific disciplines, but the book would benefit from covering in more depth such topics as neuroscience, computational approaches, and evolutionary simulations. Second, Gärdenfors' main contribution is a coherent sequencing of the evolution of the different components of thinking. However, the book often remains too vague in describing the selective pressures that would have led to such transitions.

In sum, Gärdenfors' book reminds us that the climb up to self-consciousness and culture seems to have been unique. This is perhaps the reason why tracing

back such a peculiar path has proven such a hard job—but also, indisputably, a very laudable one.

References

- Blackmore, S. (1999). *The meme machine*. Oxford University Press.
- Carruthers, P. (1996). *Language, thought and consciousness*. Cambridge University Press.
- Damasio, A. R. (1999). *The feeling of what happens: Body and emotion in the making of consciousness*. Harcourt.
- Pinker, S. and Bloom, P. (1990). Natural language and natural selection. *Behavioral and Brain Sciences*, 13, 707-784.
- Young, A. W. and Block, N. (1996). Consciousness. In Bruce, J. (Ed.) *Unsolved mysteries of the mind: Tutorial essays in cognition* (pp. 149-179). Taylor and Francis.