

Does evolution explain human nature?



Eva Jablonka

Yes, but...

we have to qualify what we mean by “human nature,” by “explain,” and by “evolution.”

If, like Aristotle, we see “human nature” as something that depends on a basic animal nature, which in turn depends

on a nature that is common to all living things, then the answer to the question is long and complicated. It has to include the evolution of the goal-directed, teleological systems underlying the origin of life and the acquisition of a mentality that endows every animal with a will, as well as the evolution of the unique aspects of the human mind. An answer would amount to re-writing Aristotle’s *De Anima* using a 21st-century evolutionary framework.

But I think that the question being asked is a more modest one, highlighting the uniqueness of human nature as compared, for example, with the nature of our evolutionarily close relative, the chimpanzee. Many people are ready to accept that evolution explains chimpanzee nature, but not that it explains human nature. They assume that at some definite point in evolutionary history, God intervened and endowed the human lineage with something that has set humankind apart from all other animals. So let us consider these more limited questions: Is there a line of demarcation between humans and chimpanzees that makes humans very different? And can we explain human nature as a product of an evolutionary process, without miracles? I believe that the answer to both questions is “yes.”

Much has been written about how humans are unique or special, but I favor the philosopher Ernst Cassirer’s views on the matter. He maintained that what sets us apart is symbolic systems, most notably, our capacity to think and communicate using language. This, he argued, is the foundation of our rationality and religiosity and for creating long-term goals and abstract

concepts like justice and truth, which organize human psychology and social life. Cassirer is right, I believe — but none of this changes the fact that our capacity to use symbols is a product of evolution. Describing the evolution of this capacity is an incredibly difficult task, because it has complex and multiple social, cognitive, and emotional bases. But during the last fifteen years great progress has been made in understanding it, especially with regard to our linguistic capacity. Although we are only at the beginning of this great intellectual journey, the framework for explaining the origins and evolution of symbolic systems is now in place.

At this point I also must qualify what I mean by “explain,” in particular, how an evolutionary account can be said to be explanatory. If we can describe the biological basis for the appearance of a new trait in a population, describe how and why it spreads, and how, over time, it becomes increasingly more sophisticated, we may claim to have provided an evolutionary explanation of this trait. Evolutionary biologists recognize that at present there are only partial evolutionary descriptions of most complex behavioral traits. Evolution explains cooperation among ants, for instance, but we are still far from being able to give a full causal account of how cooperation is instantiated in the biology of ants and of how every aspect of such cooperation has evolved. The situation is similar but even more difficult with respect to the human ability to use language and other symbols. But the question is tractable and answerable within an evolutionary framework.

Here I must qualify yet another term, “evolution.” The evolutionary framework that we need to use in this case is much wider than the one to which we are accustomed. The great evolutionary biologist Theodosius Dobzhansky famously defined evolution as “change in the genetic constitution of populations over time,” but this definition is too narrow and, therefore, misleading. We have to think about more than genes. My

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colleague Marion Lamb and I have suggested that evolution should be redefined as the “set of processes that lead to changes in the nature and frequency of heritable types in populations over time.” Heritable types include: genotypes, types of transmissible epigenetic (that is, developmentally acquired) variations, types of socially learned animal behavior, and types of symbol-based transmitted information.

With humans, the transmission of information via symbols has resulted in a very rich cultural evolution. This transmission is of major importance not only for our cultural history but also for our genetic evolution. Under the appropriate ecological and social conditions, even a crude ability to communicate using symbols, similar to that seen in trained chimpanzees, can trigger greatly accelerated genetic evolution of the capacity to use symbolic systems. This, in turn, will lead to more elaborate symbol-based cultural evolution, which will favor further genetic changes, and so on. Recognizing this positive feedback loop between genetic and cultural evolution may help us to understand how human language evolved and how other cognitive and emotional features specific to

humans — artistic ability, rationality, religiosity — emerged and became consolidated during our evolutionary history.

The original question therefore needs to be rephrased in a clumsier but less ambiguous way: Can an expanded evolutionary framework account for the specifically human features that set us apart from chimpanzees and that most of us recognize as constituting human nature? The answer is “yes.” Indeed, I believe that we can answer this question affirmatively even if we are committed to the more ambitious Aristotelian concept of human nature, which includes not only the nature of much simpler animals endowed with wills but the nature of life itself. There is historical continuity among the different “natures” that culminate in human nature. Giving a fuller account of the continuous evolution of these goal-directed systems is one of the great scientific challenges of this century.

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