

A Different Kind of Animal: How Culture Transformed Our Species by Robert Boyd (review)

Amy Ione

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**A DIFFERENT KIND OF ANIMAL:
HOW CULTURE TRANSFORMED
OUR SPECIES**

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Reviewed by Amy Ione, The Diatropé Institute, Berkeley, CA 94704, U.S.A. Email: ione@diatropé.com.

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A Different Kind of Animal is based on two lectures Robert Boyd delivered in 2016 at Princeton University as a part of the Tanner Lectures on Human Values series. In these lectures Boyd introduces his theory that biology and culture are both evolutionary, a topic he's been working on with Peter Richerson for three decades. Needless to say, this is a broad topic, a point brought home by the four commentators' responses to the lectures also included in the volume. All four commentators endorse the contours of Boyd's theory, and their critiques also raise valid questions: Is Boyd too reductive? Does Boyd's view of social learning and cooperation rely too much on copying others? Does he adequately define the ways that norms arise and change? Is he ignoring how individuals manipulate norms?

At the beginning of the book Boyd points out that his lectures are about human uniqueness and cumulative cultural adaptation, not the inventive capacities of individuals. He writes:

We are much better at learning from others than other species are, and equally important, we are motivated to learn from others even when we do not understand why our models are doing what they are doing. This psychology allows human populations to accumulate pools of adaptive information that greatly exceed the inventive capacities of individuals. Cumulative cultural evolution is critical for human adaptation (p. 16).

While he mentions cumulative cultural evolution, one problem throughout the study is that his theory is based on locally based, small-scale ethnographic studies. Indeed, the real downside of the book is that Boyd never sufficiently explains how or why anyone should presume these studies could or would apply broadly. To summarize, Boyd says that social learning accounts for our remarkable success because it includes culturally transmitted information and the rules (or norms) that govern social interaction. As Boyd explains it, in relatively small groups—again, the bulk of the research presented—the benefits associated with third-party monitoring and punishment led to the evolution of a norm psychology that allowed for more extensive small-scale cooperation in early human societies. This, in his view, may have helped weakly related bands seize benefits from social exchange. Boyd additionally postulates that this in turn led to the evolution of a moral psychology, which structured the subsequent evolution of larger-scale cooperation through what he calls cultural group selection. He also stresses that human beings differ from other mammals and have become the most dominant species on Earth. “The claim here is that we can adapt to a very wide range of environments, and other animals can’t, because cultural evolution gives rise to the gradual accumulation of locally adaptive knowledge at a much faster rate than genetic evolution” (p. 42). His phrasing often reminded me of the pre-Darwinian position that humans are exceptional because we are closer to God, although this clearly is not his argument.

More specifically, the first chapter argues that cultural adaptation means that people have to be motivated to acquire the beliefs of the people around them. Here the author endeavors to show that even the simplest hunter-gatherer societies depend on tools and knowledge far too complex for individuals to acquire on their own. Much of this argument rests on the example of lost European

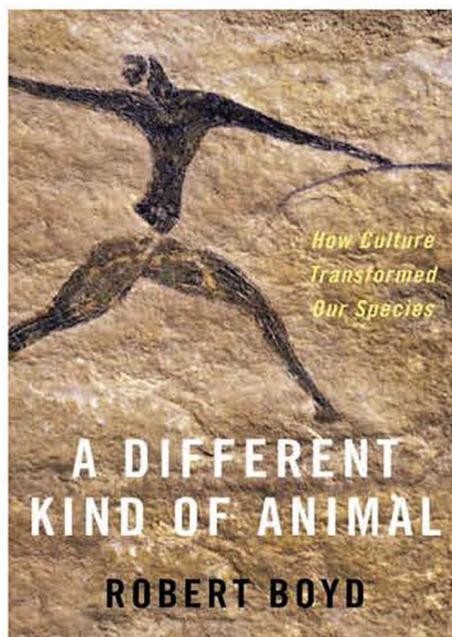
explorers Robert Burke and William Wills, introduced at the beginning of this chapter and threaded throughout the book. Wills’s diary revealed that they were saved from starvation by nardoo cakes provided by an Aboriginal group, the Yandruwandha in Australia. Later, when Burke and Wills tried to make their own nardoo cakes to survive, they died, because they didn’t have the knowledge of the Yandruwandha. Boyd attributes this to the Europeans’ lack of information. In other words, according to Boyd’s hypothesis, the Yandruwandha did not have some kind of instruction manual or natural history handbook of their area that explained nardoo preparation, because the required information was implicit knowledge that was culturally transmitted. As outsiders, Burke and Wills were ignorant of what was implicitly known to those within the culture. As a result, the explorers failed to realize the nardoo used to make the cakes contained toxic elements. Because Burke and Wills failed to prepare the plant properly, it provided no nourishment, and its poison no doubt accelerated their demise. Boyd uses various other contemporary forager groups to tease out his points about implicit knowledge, explaining that we have to look at similar cohorts because we cannot confirm the details with the Yandru-

wandha—European germs and guns wiped them out.

The second chapter, “Beyond Kith and Kin,” is about cooperation and warfare. It, too, emphasizes localized research rather than an enlarged and cumulative cultural evolution equation. In other words, Boyd doesn’t ask, for example, how “germs and guns” fit within the implicit knowledge hypothesis or why the Europeans survived and the Yandruwandha died out. Rather, his concern is human kinship in the evolutionary scheme of things, or, as he puts it, why it is that humans are the only group in nature that cooperate with those who are not kin. In his words:

Everywhere else in nature, large-scale cooperation is explained by kinship, but in humans it is not. So here’s the puzzle: How could natural selection favor changes in human psychology that led to cooperation among large numbers of unrelated people? (p. 80)

Here Boyd speaks about the impact of a system of norms enforced by sanctions imposed by third parties. Direct sanctions, he tells us, are more effective than reciprocity, an alternative theory, because they can be targeted, because they can be guaranteed by a minority of punishers, because they act as a deterrent and because the magnitude of the damage can be as much as the one doing the sanctioning can afford to administer. This argument is presented through a small-scale Turkana warfare study intended to illustrate that direct sanctions play a role in cooperation. The research on the Turkana, a group of “nomadic subsistence pastoralists who live in the arid savanna of East Africa” leads him to broadly conclude that the production of public good plays a central role in every human society but is rarely observed in other species. I do not dispute that “public good” plays a central role in societies, although given the politics and brushing aside of norms in the United States these days I suppose this conclusion is increasingly open to debate.



The larger point is that Boyd's supporting evidence does not sufficiently encompass either cultural evolution or biology in terms of the mosaic that exists in the human world now.

Presenting the volume as a discussion was an excellent idea, particularly since the core theory seems overly simplistic and reductionistic. That said, Boyd's responses to the critiques were the most disappointing aspect of the book, because, in my view, he failed to grasp some of the valid criticisms within the commentaries. The response essays also seemed somewhat truncated, suggesting there was a word limit for these authors. H. Allen Orr, an evolutionary biologist, wonders if Boyd's imitation model is really all that different from the Big Brain model he rejects. Orr also compares Boyd's work with Friedrich Hayek's argument that social norms, ethical mores and even institutions are sometimes a product of a sort of social evolution, a Darwinian natural selection. Ruth Mace, an evolutionary anthropologist, critiques the norm thesis, noting that Boyd fails to address how they arise, why they vary and how they are maintained. I found Kim Sterelny's critique the most compelling, although I wish it had been more developed; his brief led me to think I should look out for his work in this area. A philosopher of science, Sterelny largely endorses the argument that humans are outliers among mammals. However, he asks if Boyd's overly reductive framework fails to critique some of his own foundational tenets (social learning, trust, etc.). Three key points in Sterelny's essay are that (1) the lectures fail to ask whether and how social learning has changed across domains and over time, (2) Boyd's emphasis on copying ignores that we also learn by practice and (3) social learning heuristics may have become more nuanced over evolutionary time.

Finally, the response by economist Paul Seabright speaks about norm manipulation and points out that folktales offer insight into how to navigate in a world in which norms

conflict. He finds this theme at the heart of the *Iliad* and the *Odyssey*, of the *Mahabharata* and the *Ramayana*, and of other myths from around the world. His point is that these stories demonstrate that even in ancient cultures it was often hard to know what the general norm required an individual to do in particular circumstances. Boyd's response to the value of these kinds of narratives ends the book and, for me, suggested he has a very superficial relationship with humanities research and the content of the classics of various cultures:

I agree with Seabright that conflict among norms is an old problem. . . . The problem is that the content of such tales is not determined by some social function, but instead by what people find interesting and memorable, and there are good reasons to suspect that this makes the content of folktales biased in favor of situations that involve conflicts. As an analogy, imagine that sometime in the future, somebody tried to reconstruct twentieth-century English life from a collection of Agatha Christie novels. They'd get some things right but would vastly overestimate the likelihood of murder (p. 196).

His equating of these tales with Agatha Christie suggests a limited understanding of the range of information these kinds of stories contain and seems more like a straw man retort than a thoughtful comment on cultural norms. For one, earlier he writes that warfare and cooperation are a part of all cultures, and yet he rejects the value of these narratives: "The content of folktales [is] biased in favor of situations that involve conflicts" (p. 196). More concerning is that Boyd doesn't seem to know that the tales of an oral culture serve as a vehicle for the transmission of its implicit knowledge, which becomes more evident as a culture begins to write down tales. While I do not know if the Yandruwandha who helped the European explorers had

an oral literature that served as the kind of handbook Boyd tells us did not exist in regard to nardoo, many cultures did transmit this kind of information orally at first. Because some oral tales, like the *Iliad* and the *Odyssey* or the *Mahabharata* and the *Ramayana*, were later written down, we can see how they served to educate the culture at large. Indeed, researchers have shown that they cover everything from medical treatment (e.g. of wounds in battle in these tales superficially about conflict) to social norms.

In summary, I question whether Boyd's narrowly designed studies provide a sufficient entry point through which to think about cultural evolution in terms of large-scale, living cultures. Narrow ethnographic populations hardly mirror how cultures have evolved around the globe and brought us to where we are now. Given the diversity within the global demographic mosaic, I am unconvinced that any of the cultures presented in his research are representative of populations at large. This is not to say that the work isn't compelling on its own terms. As for the biological aspect of Boyd's work, I was somewhat perplexed by the lack of attention Boyd gives to studies of the brain per se. While I share his dissatisfaction with evolutionary psychology and agree that theories of mind leave much to be desired, his proclamations about social learning are largely speculative. They seem to exist in a cognitive vacuum in terms of the broad range of studies on learning and education available these days. In addition, unlike Daniel Lord Smail's *On Deep History and the Brain* [1], which weaves the deep past before writing on contemporary findings in neuroscience and neurobiology, Boyd seems to find having a model that links to elements of our present culture unnecessary.

As I read, I kept thinking that Gerald Edelman (1929–2014), the American biologist who shared the 1972 Nobel Prize in Physiology or Medicine, offers a counter position that strikes me as a better starting point

than Boyd's work. Edelman's Neural Darwinism theory, built around the idea of plasticity in the neural network in response to the environment, seems more responsive to change. Edelman writes:

Given the parallel, constructive brain processes that underlie consciousness, given the recursive symbolic properties of language, and finally, given the irreversible historical bases for specific symbolic and artistic realizations in society and culture, there can be no fully reducible description of human knowledge. But different spheres of knowledge and different subject domains can be compatible with each other, and their bases in biological and cultural evolution can be understood [2].

Finally, like the four commentators, I endorse the contours of Boyd's theory. I also differ from them in a way worth mentioning. A striking element that tied the four responses together is that given their familiarity with "Rob's" (or Rob and Pete's) work, they all seemed to derive from a particular framework of social biology with its own set of norms. Suffice it to say that while I am familiar with some of the threads of this approach, I was surprised to find that the lectures brought to mind the *Two Cultures* framework, one I am frequently inclined to take issue with in terms of art and science. As a result, this book convinced me that the chasm is much larger than I conceptualized. Although I, too, think that both biology and culture are evolutionary, and my research aims share some commonalities with Boyd's perspective, I find it puzzling that my research focus is not at all similar to his, nor does it resemble the alternative theories he dissects and rejects.

Because Boyd's quantitative analyses rely so much on local ethnographic studies, he misses large swathes of human cultural adaptation. Indeed, because Boyd does not provide sufficient connective tissue for explaining how his theoretical

conclusions about cultural adaptation led to various communities of today with long and evolving histories, his discrete studies say little about how the present state of affairs came to be. As he himself notes, "In a contemporary world in which external conditions are changing at a frantic pace, there is no reason to suppose that existing norms are well suited to current environments" (p. 105). Similarly, as even Boyd recognizes, he does not offer a fulcrum that explains many things we see around us:

In the United States over the last few decades there have been shifts in norms about smoking, premarital sex and giving birth to children out of wedlock, and same-sex marriage. It seems implausible that any of these shifts were caused by competition between groups. There has been no group extinction or spread and we didn't copy the new norms of anybody else. . . . We don't have a good theory explaining such shifts in norms (p. 109).

References

- 1 D.L. Smail, *On Deep History and the Brain* (Berkeley: University of California Press, 2008).
- 2 G.M. Edelman, *Bright Air, Brilliant Fire: On the Matter of the Mind* (New York: Basic Books, 1992) p. 177.