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Metadata of the article that will be visualized in OnlineFirst

ArticleTitle	TIM LEWENS, <i>Cultural Evolution: Conceptual Challenges</i> , Oxford University Press, xi + 2xx. p. 2015. \$45.00	
Article Sub-Title		
Article CopyRight	Springer International Publishing AG (This will be the copyright line in the final PDF)	
Journal Name	History and Philosophy of the Life Sciences	
Corresponding Author	Family Name	Richerson
	Particle	
	Given Name	Peter J.
	Suffix	
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	Received
Schedule	Revised
	Accepted


Footnote Information

3 **TIM LEWENS, *Cultural Evolution: Conceptual Challenges,***
4 **Oxford University Press, xi + 2xx. p. 2015. \$45.00** 

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6
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9  This book is a philosophical examination of the scientific study of cultural
10 evolution. It focuses on the Darwinian approach to cultural evolution in which
11 culture is treated as an inheritance system that evolves by mechanisms broadly
12 analogous to the evolution of genes. This field has attracted a lot of attention, not all
13 of it favorable. A number of criticisms have been articulated by socio-cultural
14 anthropologists, evolutionary biologists and others. Lewens' objective is to sort out
15 the main issues involved in the disputes over the role of Darwinism in the social
16 sciences. Is the work of the Darwinian cultural evolutionists basically sound or
17 fundamentally flawed?

18 Humans learn from one another and what we learn from one another changes
19 over time. Over the last century, the proportion of people in industrializing countries
20 who could drive a horse or ox team has dropped from an appreciable percentage to
21 near zero. Lewens divides approaches to understanding this process into three
22 pragmatic categories, *historical*, *selectionist* and *kinetic*. Historians describe cultural
23 change but do not have an ambitious theoretical agenda. Selectionists mean to
24 account for changes in culture in terms of a Darwinian struggle for existence on the
25 part of ideas, techniques, and practices. Kinetic theorists imagine a broader set of
26 evolutionary processes affecting cultural evolution than just close analogs of natural
27 selection. Human individual and social learning are inventive and biased in ways
28 that have their closest biological analogs in sexual and artificial selection rather than
29 in natural selection. The key thing that makes kinetic theories evolutionary is that
30 learning biases have population level effects. For example, the repeated action of
31 biases over many generations can have a cumulative effect, such as historians

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document in phenomena such as technology and legal traditions. Lewens offers Robert Boyd's and my work as an exemplar of the kinetic theory, which is the main focus of the book.

Lewens finds the kinetic theory most interesting because it is more general than the selectionist account. Some, but not all, forces acting on culture bear a close resemblance to natural selection acting on genes. Further, the critics of cultural evolution have not understood the differences between cultural selectionist and kinetic accounts. Cultural selectionists, such as proponents of memetics, propose a close analogy between genes and culture that critics correctly complain does not do justice to the rather different properties of culture. For example, cultural transmission need not involve replication in the same sense that DNA is replicated and it has the property of the inheritance of acquired variation. Kinetic theorists draw only a loose analogy between genes and culture.

Critics of the kinetic cultural evolution project are often unfamiliar with its details or are too eager to repeat old misunderstandings of evolution. Lewens discusses the muddled charge leveled by Adam Kuper that cultural evolutionists are progressivists. Another frequent complaint is that the cultural evolutionists' models do not add anything to the eclectic common-sense explanations of historians for historical changes. To explain the success of some particular cultural variant in some particular environment in terms of its "fitness" does not do any real work. However, the kinetic theorists' models, such as models of conformist transmission, are about specific processes that affect cultural evolution not about some vague notion of fitness. In any case, as Lewens points out, cultural evolutionists are as keen to explain cases where cultural evolution has apparently evolved in maladaptive directions as cases where it is apparently adaptive.

Lewens spends a chapter evaluating the idea that culture can usefully be defined as information as Boyd and I did in our 1985 book. This idea was borrowed from biologists who talk of genes being information based entities. Lewens finds fault with the existing attempts to specify exactly what information means in the context of culture and cultural transmission but has no objection to its informal usage as a cover term for ideas, skills, beliefs, attitudes and the like.

Much of the debate within the evolutionary social sciences is epitomized by the use of the term "human nature" by thinkers like E.O. Wilson, John Tooby, Leda Cosmides, and Steven Pinker. Cultural evolutionists, by contrast, make relatively little use of the term. Lewens devotes two chapters to this issue in part because critics of the cultural evolutionists like Maurice Block, Tim Ingold and others, think that the kinetic theorists are committed to a strong distinction between human nature and human culture. He shows that giving human nature a substantive role in human evolution is indeed fraught, but that cultural evolutionists have no need of human nature. Hence Bloch et al.'s skepticism is unwarranted. In fact, cultural evolutionists use the term "gene-culture coevolution" to refer to the processes that intimately link the genetic and cultural streams of inheritance. Cultures, for example, during development tap into ancient, highly conserved emotional systems to motivate culture specific behaviors. In evolutionary time, culturally motivated social selection has probably shaped genes to produce the relatively docile temperament of humans compared to other apes. At the same time genes have sufficiently

78 harnessed culture to make us an extremely successful species. This profound
 79 entangling of genes and culture in developmental and evolutionary processes means
 80 that dissecting out a human nature based on the effects of genetic evolution and
 81 development from those based on cultural evolution and socialization is impossible.
 82 Developmental Systems Theorists, echoing Bloch and Ingold, are suspicious that
 83 models with separate genetic and cultural channels do not do justice to the complex
 84 developmental processes that entangle them and that they thus still retain a flavor of
 85 human nature. Lewens gives a qualified defense of the kinetic theorists on this score
 86 by reviewing the work on adult lactase persistence, one of the signature examples of
 87 gene-culture coevolution.

88 Other critics of cultural evolution fault its commitment to formal models of
 89 evolutionary processes. One fear, that the models hew to unreasonably close
 90 analogies with concepts from evolutionary biology like fitness, is easily dismissed.
 91 Many cultural evolutionary models study phenomena in which fitness plays an
 92 ancillary or no role. Similarly, the complaint that the models cannot be faithful to
 93 the rich complexity of the ethnographic or historical record has little traction
 94 because the kinetic theorists concede the complexity of the sociocultural world.
 95 Models, like controlled experiments, give us insights that are not attainable by
 96 contemplating a complex system directly, but only very naïve modelers confuse
 97 their simple models with the much more complex world from which they are
 98 abstracted. Lewens reviews a number of examples of kinetic modelers critiquing
 99 each others' simplifying assumptions on both formal and empirical grounds.
 100 Clearly, not all models are well conceived and some simplifications are empirically
 101 more plausible than others. Cases differ, so a model that is acceptable in one context
 102 may prove deficient in another. It is by contesting these issues that modeling
 103 contributes to science.

104 Richard Lewontin, among others, argues that cultural evolutionary models cannot
 105 handle the all-important issue of power. He rightly points out that individuals do not
 106 necessarily freely chose the cultural variants they prefer but may often be more or
 107 less coerced or influenced to adopt particular variants by individuals or groups of
 108 individuals with greater economic or political authority. Lewens notes that
 109 conformist and prestige biased transmission do take into account unequal weights
 110 of individuals in the transmission process. Peter Turchin's models of human history
 111 have elite and commoner classes with explicit power differentials. His models are
 112 inspired by community ecology. Lewens imagines, quite reasonably, that the kinetic
 113 models inspired by population genetics can only do some of the work needed for a
 114 comprehensive theory of cultural evolution.

115 Under the term cultural adaptationism Lewens discusses the relationship between
 116 Tooby and Cosmides' Evolutionary Psychology and the kinetic cultural evolution-
 117 ists. Lewens argues that the differences between these two branches of evolutionary
 118 social sciences are exaggerated and correctly points out a considerable number of
 119 commonalities in their approaches. To my mind, whether the differences are ones of
 120 emphasis and style or are more profound comes down to an exercise in literary
 121 interpretation of Tooby and Cosmides' texts, which are perhaps not clear enough or
 122 consistent enough to bear the weight of philosophical or scientific analysis. Their
 123 critique of the Standard Social Science Model can be read as a radical, wholesale

124 rejection of any substantial role for culture as understood by most social scientists
 125 and by the kinetic cultural evolutionists. In his 2015 essay in *This Idea Must Die*,
 126 edited by John Brockman, Tooby nominates learning and culture as concepts that
 127 are impeding scientific progress and ought to be discarded. Lewens says that
 128 Cosmides and Tooby are not committed to an implausible denial of cultural
 129 variation, but it seems that, plausibly or not, they are. Clearly, some Evolutionary
 130 Psychologists do not share this radical rejection, for example Clark Barrett.
 131 Similarly, Tooby and Cosmides' concept of human nature seems to express a
 132 commitment to a reading of the Modern Synthesis that privileges natural selection
 133 on genes as the only ultimate explanation for adaptive behavior, ruling out the
 134 action of cultural group selection or culture led gene-culture coevolution. Here I
 135 think Lewens has, uncharacteristically, missed a beat. On the other hand, his critique
 136 of the attempt to infer cognitive architecture from high level adaptive considerations
 137 is correct.

138 Lewens' conclusion at the end of the book is that we need an eclectic approach to
 139 the problem of cultural evolution, drawing upon all of the relevant biological and
 140 social sciences and upon history. He illustrates this point using the emotions. He
 141 asserts that cultural evolutionists have generally fallen in with cognitive depictions
 142 of psychological processes to the relative neglect of the emotions. I agree that the
 143 emotions deserve more attention and that his specific suggestions are apt.

144 In sum, *Cultural Evolution* explores claims and critiques of the kinetic cultural
 145 evolutionists and concludes that it is a generally sound enterprise, notwithstanding
 146 pointing out weaknesses, limitations, unfinished work, and sometimes too-grandiose
 147 claims.

Journal : **40656**
Article : **116**



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