The Species Problem: A Philosophical Analysis.——

Over the past 50 years, since the sesquicentenary of Charles Darwin’s birth, there has been a story about the concept of species that has become the received view among biologists and philosophers alike. Historians Polly Winsor, Gordon McOuat, Ron Amundson, and myself, among others, have attempted to deflate this story, which we call the “essentialism story” (McOuat 2001; Winsor 2003, 2006a,b; Amundson 2005; Wilkins 2009a,b). What has been lacking, however, has been a post-essentialist philosophical interpretation of the species concept, which is what this recent book by Richard Richards undertakes to provide.

According to the essentialism story, before Darwin worked his magic upon our thinking a species was treated as a natural kind, which is defined by the possession among its members of some set of necessary and sufficient properties: its essence (Hull 1965; Kitts D.B. and Kitts D.J. 1979; Okasha 2002; Levit and Meister 2006; Bird 2009). Now, “essence” is a term with a wide array of meanings and histories, but for 50 years philosophers have equated it with the claim that there is a “species nature” and argued that this conception of species is fundamentally in conflict with Darwinian evolution and population thinking (Sober 1980; O’Hara 1997).

Richards attacks this historical story, as have others, but he goes further. After presenting the historical considerations in the first four chapters, comprising 112 pages of the book, Richards then overviews the current philosophical views in the fifth chapter, which considers the philosophical views of those biologists who have written on the topic, such as Rick Mayden, Ed Wiley, Brent Mishler, and Michael Donoghue, as well as the philosopher commentators. The subsequent chapters cover philosophical topics: the metaphysics (Chapter 6) and semantics (Chapter 7) of species concepts. Chapter 8 summarizes the philosophical conclusions.

If the historical basis for the essentialism story is wrong, what about these philosophical issues? Biologists might think them irrelevant to the practice of systematics, and in everyday terms they probably are, but after all it was biologists like Ernst Mayr who raised the matter in the first place. In this book, Richards sets up the problems well and motivates them from both the biological and the philosophical standpoints. The book gives the usual story in good detail and at a level that could be profitably read by upper level undergraduates as well as philosophically inclined systematists. It offers a useful corrective to the standard textbook story of how everything was Aristotelian or Platonist before Darwin and how Darwin freed us from the strictures of the Greek eidos, but the book is not, I think, as free of that approach itself as it might be. In what follows, I shall make some slight and amicable criticisms, which I hope will not put anyone off reading Richards’ book.

It often appears from a philosophical point of view that what philosophers think about kinds, species, and forms is very largely a matter of language. A philosopher will talk about the “essence” of a “tiger” or an “elm,” with no consideration given to the actual biology involved. Richards carefully focuses upon the biology, but in so doing he and others he is reporting, like Saul Kripke and Hilary Putnam, tend to equate the claims made in philosophy of language and the subject of biology. However, it seems to me that there is a bit of philosophical kit available, which has been available for a very long time, that might clear up some of the confusion: John Locke’s distinction between the “real essence,” which is the (to Locke unknowable) causal powers that cause things to be what they are, and the “nominal essence,” which is the definitional properties of terms that we apply to these things. Locke is famous for having said that we can know only nominal essences.

Some recent accounts of species, such as the “homeostatic property cluster” account of Richard Boyd and others discussed in the meaty Chapter 6 of Richards’ book, seem to attempt to straddle this distinction. The meaning of the word or concept “species” is that it is a kind causally held together by some set of powers, or as a biologist would say, by developmental, ecological, and phylogenetic properties and processes. But there is a considerable amount of vacillation between our diagnostic definitions of species (observations of morphology, molecular sequences, and ecological behaviors) and the causal explanations of those observations. This broadly equates to Locke’s “nominal” and “real” essentialism. For example, DNA bar coding is clearly a diagnostic essence, with no consideration given to the actual biology involved. Richards carefully focuses upon the biology, but in so doing he and others he is reporting, like Saul Kripke and Hilary Putnam, tend to equate the claims made in philosophy of language and the subject of biology. However, it seems to me that there is a bit of philosophical kit available, which has been available for a very long time, that might clear up some of the confusion: John Locke’s distinction between the “real essence,” which is the (to Locke unknowable) causal powers that cause things to be what they are, and the “nominal essence,” which is the definitional properties of terms that we apply to these things. Locke is famous for having said that we can know only nominal essences.

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and nominalism = species individualism, settling in the end for the latter. Given the final (seventh) chapter about the philosophy of language and the meaning of kind terms (which might be of interest only to the philosophers, not to the systematists), I would have expected more discussion about that issue. This is quite apart from the question of whether kind terms are necessarily about definitional classes (I think not), which is what most people think of as essentialism. I believe that this is in fact a wrong characterization of the role that “essence” and cognates have played in biology, although it may have played out in philosophy.

One response to this standard view, in fact the source for much of it, is Michael Ghiselin’s well-known thesis called “species individualism” (Ghiselin 1974). According to this view, widely adopted by philosophers and biologists until recently, a species is not a class or kind but a historical individual. No laws or universal generalizations can be made about an individual, according to the standard story. Here, again, the Lockean distinction helps. If what makes a species a species is some set of shared (or mostly shared) causal properties (the “real essence” in Locke’s terms), as it surely must be if species are real things individually, then it does not follow that we will have access to them. One can be simultaneously a nominalist with respect to descriptions of species and an essentialist with respect to causes. The individualist thesis is, I believe, based upon a false dichotomy. Richards ends up concluding in favor of the individualist thesis (under the rubric “species-as-individuals”), but despite his proposing a distinction between functional and taxonomic essentialism (with Renaissance naturalists, p. 54), he does not seem to make much of it where it would help.

All in all, this book will be extremely useful for teaching purposes and as an excellent introduction to a complex and difficult subject. Moreover, it sets up the issues for the various alternative views, in particular the individualist view. However, I think that it does not offer a proper treatment of the homeostatic property cluster view and that in the end it is not entirely convincing, even when, as I do, you think that the solution presented in the book is probably right.

References


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