

Joseph LaPorte *Natural Kinds and Conceptual Change*. New York: Cambridge University Press 2004. Pp.x + 221. \$70 (Cloth: ISBN 0-521-82599-7).

Natural Kinds and Conceptual Change is a refreshingly direct book that challenges a range of orthodox views in the philosophy of science (especially biology), the philosophy of language, and metaphysics. Amongst these are the views that species are individuals rather than natural kinds; that scientists discover the essences of natural kinds; that the causal theory of reference has commonly-ascribed implications for realism and analyticity; that there is an unacceptable form of incommensurability entailed by descriptivism about reference; and that there are good grounds, familiar since Quine, for thinking that there is no distinction of significance to be drawn between changes in meaning and changes in theory. LaPorte argues against all of these claims, and if you are curious about just how he does it, then this is a book for you.

Following a short, general introductory chapter, the book has six chapters that divide into three pairs. The first pair lay out LaPorte's views of what natural kinds are and their relationship to rigid designation and essentialism, and focus on species; the second pair turns to biological and chemical kind term reference; and the third pair concentrate on some of the philosophical fallout from earlier chapters, particularly their implications for incommensurability and the nature of conceptual change. The book is an interesting blend of naturalistic philosophy of science, using examples from biology—particularly from systematics and evolutionary theory—and analytic metaphysics and philosophy of language, and is well worth the read. The arguments are, for the most part, succinct and clear, with the argument flowing from well-chosen and researched examples (primarily from biology and chemistry) to general claims that have perhaps too easily won their orthodox status in their respective fields.

Consider the first of these general claims that LaPorte takes on, the claim that species are individuals. This is usually presented as a view about particular species, such as the domestic dog, Canis familiaris, and makes a claim about their ontological status: the species Canis familiaris is an

individual rather than (as past orthodoxy held) a natural kind. Originally articulated by the biologist Michael Ghiselin, and championed by him together with David Hull for the past 30 years, the species-as-individuals thesis holds dominant sway amongst biologists and philosophers working on species. LaPorte recounts the chief arguments that have been given for the thesis, a mixture of reasons against holding that species are natural kinds (e.g., there are no biological laws about species) and reasons for thinking that they are individuals (e.g., species are spatio-temporally restricted). He identifies important weaknesses in each, and so one might expect him to reject the species-as-individuals thesis (he goes so far, on p.15, to suggest that the failure of arguments for the individuality thesis leave the view of species as kinds as the default position). But in fact LaPorte goes on to adopt what sounds like a much weaker claim, namely, that species can be interpreted as natural kinds or as individuals, entailing that the species-as-individuals thesis is a possible option rather than either a forced move in or a requirement of our thinking about species.

That might be a defensible position itself, but it invites the following kind of probe: “The species-as-individuals thesis is usually presented as being incompatible with the idea that species are natural kinds, and not unreasonably so: individuals and natural kinds are very different ontological critters. Forget whether species can be construed or interpreted as individuals or as kinds. The debate is about whether species really are individuals or kinds (or both, or neither). Where do you stand on this issue?”

I want to hazard a guess as to just where LaPorte does stand here, based on the broader argument of the book. For much of the book offers a response to just the kind of impatient realism that lies behind the probe above, and saying more here will convey some idea of the positive view of science and language that LaPorte chalks out.

Whether species are individuals or natural kinds, LaPorte might say, is not fixed by either the meaning of the term “species” or by our best theories about species. The meaning here is open-textured, and context can be used to settle whether the predicate “is an individual” or “is a natural kind” (or neither or both) is more appropriate for any given occasion. Moreover, the debate over the ontological status of species does not concern a sort of deep, underlying fact awaiting scientific discovery or resolution—a kind of essence about species—but simply reflects the options open to future

scientific discourse. Maybe scientists will decide that species are individuals (or that they are natural kinds, or both, or neither), but this will be a decision, not a discovery, and one that could readily have gone another way, given our current meanings and theories. Adopting this kind of focus on linguistic change and its relationship to theoretical change, however, implies neither that science is irrational here, nor that it is incapable of progress or knowledge accumulation, as aficionados of various incommensurability theses hold. Rather, we need to understand how linguistic change is interwoven with theoretical advance, and the historical commonalities that lie in the background whenever a major issue, such as whether species are individuals or natural kinds, is resolved. This also allows us to distinguish changes of meaning from changes in theory, not least of all because meaning changes are often prompted by changes in theory.

Whether or not LaPorte would endorse these claims about the species problem, he does advance similar claims about natural kinds, including species, throughout Natural Kinds and Conceptual Change. If warning lights were going off while you read the previous paragraph, they will likely flash as you read through the first half of LaPorte's book. Species, he says, are natural kinds (but also, perhaps, individuals). In Chapter 2 he nicely articulates the idea that they have historical essences (at least for cladists they do). Particular species, such as the tiger species Panthera tigris, have the essential property of being the biological lineage that has descended from a given population and that terminates in some particular speciation or extinction event. Being a member of Panthera tigris and being a part of that biological lineage are properties that any individual has in precisely the same possible worlds, and so this natural kind term and the description used to characterize it are necessarily coextensive. This implies, he argues, that species belong essentially to their higher taxa, but is compatible with the denial of essentialism about an individual's membership in a given species. That is, it is an essential property of Panthera tigris that it belong to the genus Panthera, but it is only an accidental property of any particular tiger that it belong to that species (or genus).

At the physical and conceptual heart of the book is LaPorte's claim that, even given all of this, it would be a mistake to hold, as many do, that scientists discover essences, a claim that he defends through chapter-long discussions of each of biological and chemical kind term reference. But before getting to that, consider the question of whether particular species have essences, and if so, what these are. There are several issues here. One

stems from pluralism about species concepts. According to cladists, species have historical essences; according to proponents of the so-called “biological species concept”, species have a reproductive essence. Notoriously, there are many different species concepts employed by scientists in different biological fields (ecology vs evolutionary theory vs virology), and on distinct biological taxa (mammals vs birds vs bacteria). When LaPorte considers this point, he treats pluralism as yet another species concept, along with monism (pp.74-5), taking all of these on board in much the way that I suggested he might do with the prima facie competing views that species are individuals and that species are natural kinds. But this makes the kind of essences that he is endorsing somewhat like Locke’s nominal essences, for they exist as the “workmanship of the understanding” or, more properly, as a function of the different kinds of inquiry that we bring to bear on the biological world. On this kind of issue LaPorte retreats too far from realism to maintain the kind of essentialism that he wants to endorse.

Another issue here concerns the characterization of the essences that species have. One problem that phylogenetic views of species face is that of distinguishing species from other—typically larger--monophyletic units, a problem that has motivated some (such as some proponents of the Phylocode) to advocate rank-free taxonomy that departs from the traditional Linnaean hierarchy. It is not simply that we do not know what the founding populations for most species are—that’s primarily an epistemic limitation—but of whether there is an objective basis for singling out species as special kinds of lineage (and, if so, what that basis is). Here is another live issue that forms part of the species taxa problem that one would like LaPorte to say something more about.

Recognition of the disagreement that exists between biologists about species forms one prong to LaPorte’s argument for the claim that scientists do not discover essences. But he also appeals to a familiar analogy between concepts and maps (pp.80-3) and to the ways in which meaning change and theory change are linked (pp.83-90, and ch.4 passim) to support this claim. Suppose that cladism were to win the day about species, so that ‘bird’ had a cladistic essence. LaPorte says, “there will have been a change in the meaning of ‘bird’, not a discovery of the relevant kind’s essence” (p.83), since cladists are primarily refining the meaning of the natural kind term ‘bird’. But here one wonders just why change in meaning and discovery of essence are juxtaposed in this way, why the former is taken as precluding the latter. One of the virtues of LaPorte’s views is that he assesses strong,

general claims made about reference and essence by means of a discussion of informed examples, and it would have been nice to see some of his own positive claims and assumptions more consistently held to the flames in this way.

The final two chapters address larger themes in the philosophy of science (incommensurability) and the philosophy of language (analyticity); I'll say something only about the former. In Chapter 5 LaPorte argues that although the problem of incommensurability is not resolved by the causal theory of reference, a kind of cluster description theory, together with attention to particular forms of linguistic and theoretical stability, can solve this problem. LaPorte develops his argument here by an appeal to two case studies, that of pre- and post-Darwinian uses of 'species', and that of the overthrow of vitalism. In general terms, LaPorte adopts a position that purports to lie between the excesses of Kuhnian relativism and the historical insensitivity of traditional realism. Here he appeals again to the open-textured and vague nature of many claims about species and vitalism, with these concepts being refined through diachronic theoretical change. But whether one thinks he manages to remain moderate here will turn on how one views the following kinds of statements he makes: "Before the Darwinian revolution, 'species' did not refer to species: It did not clearly and precisely refer to anything, because the presuppositions for use turned out to be false" (p.131).

There is much more in this book than I can discuss, even in a review whose length presses an editor's goodwill. I recommend Natural Kinds and Conceptual Change to philosophers in each of fields that it addresses.

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