

- Radder, Hans (ed.) (2003), *The Philosophy of Scientific Experimentation*. Pittsburgh: University of Pittsburgh Press.
- Rouse, Joseph (2003), *How Scientific Practices Matter: Reclaiming Philosophical Naturalism*. Chicago: University of Chicago Press.

Jody Hey, *Genes, Categories, and Species: The Evolutionary and Cognitive Causes of the Species Problem*. Oxford: Oxford University Press (2001), xvii+217pp., \$54.50 (cloth).

With over twenty-five species concepts currently in circulation, the “species problem” is alive and well. Frustrated by the preponderance of concepts, evolutionary geneticist Jody Hey proposes a resolution by diagnosing current ills in terms of the gap between scientific theories and cognitive categories. In doing so, Hey strives not just to demonstrate how scientists answer the question of what species are, but why they are still “holding out for the Big One”—“that one single definition of species, or that succinct species theory, that will dispel our questions and struggles” (12).

For Hey, the appeal of monism about species is not a result of metaphysical or epistemic commitments, but cognitive bias. Using psychological theories of mental categories, Hey argues that the way we use categories may be an important part of the species problem. Hey’s turn to categories is motivated by an extensive review of the biological and philosophical literature, where he acknowledges the value of scientific theory and measurement, as well as the value of careful analysis of language, usage, and reference. However, Hey argues that scientific and linguistic approaches will not succeed in creating consensus, because they are often in conflict with our basic processes of category formation and use.

According to Hey, the dispute over species concepts is not generated by evolutionary biology alone. In fact, Hey argues that our understanding of evolutionary processes allows us to identify real evolutionary groups. While these real evolutionary groups are the objects of theories of biological diversity and systematics, they do not necessarily correspond to species. For many, the conceptualization of these real evolutionary groups lies at the crux of the species problem. For Hey, the nature of these real evolutionary groups is less of an issue compared to the confusion he sees generated by our cognitive categories.

Hey acknowledges that we cannot stop using categories, although they certainly deserve more careful analysis. The best that a working scientists

can do is to be aware of his or her categories and compensate for this cognitive bias in favor, one presumes, of the real evolutionary groups picked out by scientific theories and measurements.

However diligent we may all strive to be, it is not clear that Hey's strategy for countering species pluralism will work. Hey understands pluralism only in terms of the gap between our category-laden perceptions and our understanding of evolutionary process. Marc Ereshefsky and others have made compelling arguments for more robust forms of pluralism that Hey does not address. In the short term, adding this cognitive dimension to the analysis of the species problem will probably not bring it any closer to resolution. Nevertheless, Hey's cognitive approach is interesting and well worth consideration.

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William D. Casebeer, *Natural Ethical Facts: Evolution, Connectionism, and Moral Cognition*. Cambridge, MA: The MIT Press (2003), x + 214pp., \$35.00 (cloth).

The ambitious aim of this book is to show how a pragmatic, neo-Aristotelian virtue theory that emerges from an appreciation of results in (1) evolutionary biology, (2) cognitive science, and (3) ethics can lead to both a revolutionary understanding of moral theory and to a radical reformation of social institutions. The idea is to forge a naturalistic, normative moral theory that is "empirically tractable."

There is a good deal of literature on the possible interconnections between evolutionary psychology and ethics. The problem is that there is no general agreement about what the implications, if any, would be. For starters, evolutionary psychology seems to promise, at best, an empirical account of the evolution of our moral sentiments. Most moral philosophers, on the other hand, think that the articulation and justification of norms and behaviors are the central concerns of ethics. It is not at all clear what the relevance of the empirical story for the moral story might be.

The apparent dichotomy between facts and values poses a formidable problem for all those who seek to defend a naturalistic interpretation of norms. On the surface, it appears that facts are facts and norms are norms and never the twain shall meet (or so the tradition goes). On the other hand, the naturalist is committed to somehow bridging the gap between