

BOOK REVIEWS

Andrew A. Reynolds, *Peirce's Scientific Metaphysics: The Philosophy of Chance, Law, and Evolution*. Nashville: Vanderbilt University Press (2002), xii + 404 pp., \$49.95 (cloth).

The mid-nineteenth to early-twentieth century saw many achievements in the sciences which had significant impact upon philosophy: the formation of psychology as a science with Fechner's groundbreaking work in psycho-physics, biology's achievement of a central theory with Darwin in 1859, the development of statistical methods, the well known developments in physics, and foundational work in math and logic. Until recently, philosophers have primarily focused upon the impact of the physical and mathematical sciences upon philosophy, and thus the history of philosophy for this time period has all but ignored the impact of the life sciences upon philosophy. Evolution is duly noted for its providing a materialistic solution to the Argument from Design, but receives virtually no credit for the enormous impact it had upon the underlying metaphysics of such thinkers as Nietzsche, Peirce, and Mach. This book attempts to rectify this mistake, offering an essentially new and critically important understanding of Peirce. To the extent that previously we were in the dark about the actual origins of much of Peirce's metaphysics, all Peirce scholars should read this. Furthermore, for philosophers of science, it is another example of how important the history of science is to our discipline.

Although Peirce is known for his work in logic, semiotics, and general philosophy of science, Reynolds convincingly argues that his metaphysics arose within other contexts: evolution, statistics, and German *Naturphilosophie*. Rather than viewing Peirce through the lenses of twentieth century philosophy of science, Reynolds summarizes Peirce's thought as "Hegelian dialectical idealism meets Darwinian evolution and statistical thermodynamics" (6). Most importantly, Peirce cannot be understood outside of the context of an evolutionary cosmology which was deeply embedded within the peculiar biology of the times.

The role of physics in Peirce's larger cosmology came primarily from the developments of statistical models, where he saw the physical world being driven by a combination of chance and irreversibility. Yet these same forces were at work within Darwinian evolution, and thus he saw the possibility of unifying the physical and psychical under the law of chance. But

rather than offering a reduction of the psychical to the physical, Peirce, typical of his era, suggested that the physical had developed out the psychical. While now abandoned, a family of such ideas dominated late nineteenth century thought.

In this time period there was a broad consensus that traditional attempts to understand the relationship between matter and mind had failed, and there was great optimism that the new sciences could provide an answer. A scientific monism dominated the era, though there was no agreement as to its form. Peirce apparently adopted an idealistic version where the psychological had a certain temporal and epistemic primacy over the physical. The physical laws of nature were themselves developmental, and thus he offered a cosmology influenced by *Naturphilosophie* where statistical variations were driven by an inner teleology to form complexity at both the organic and inorganic levels. This idea of an inner teleology is perhaps the most important concept of late nineteenth century philosophy. It existed before the rise of evolutionism, but was immediately appropriated by the evolutionists in the cause of providing a variety of grand cosmological systems. Reynolds effectively demonstrates that Peirce belongs to this tradition.

For this reviewer, the most exciting aspect of this book is that it shows that Peirce's thought parallels with amazing closeness one of his prominent contemporaries, Ernst Mach. In detail their thought is quite different, but remarkably similar in regards to their use of evolutionary theory as a metaphysical framework. For both, the life and not the physical sciences provide the primary epistemological and metaphysical background. In many ways Mach is much more extreme than Peirce, but they share in common the fate of being long misunderstood and misappropriated simply due to the fact that the life sciences were eclipsed by the physical sciences for most of the twentieth century. Now that biology and psychology are once again regaining their pre-eminence (as measured by corporate and governmental funding, public press releases, and their philosophical inspirations to both epistemology and metaphysics), it may be valuable to re-examine our understanding of the insights and mistakes made by our intellectual predecessors.

Out of necessity, Reynolds covers a vast intellectual terrain, including historical and philosophical issues in physics, math, psychology, and biology. Not surprisingly, he leaves future writers much work. For instance, Peirce's discussions of "Evolutionary Love" were similar to those common amongst popularizers of evolutionary theory in Germany. It would be interesting to examine Wilhelm Bolsche, one of the most prominent of these, and see if Peirce was influenced by him. In general, additional work is needed on the nuances of evolutionary theory in this era. Reynolds relies primarily upon secondary sources (Bowler and Gould),

and those with training in the history of biology may be dissatisfied with his quick treatment. Peirce apparently was well aware of the different evolutionary ideas, and comments on them, even developing his own. I suspect that to fully understand Peirce here, further work is needed. However, these minor gaps in no way detract from this book; it is ground-breaking in that it opens up points of contact between previously disparate fields, and places us on the path of finally understanding one of the founders of modern scientific philosophy.

PAUL POJMAN, TOWSON UNIVERSITY

Bas C. van Fraassen, *The Empirical Stance*. New Haven: Yale University Press (2002), xix + 282 pp., \$30.00 (cloth).

Bas van Fraassen's (constructive) empiricism was initially conceived as a rival to realism. But, for him empiricism is not just another view in the realism-anti-realism debate in philosophy of science. In one of his articles, he advances empiricism as "an approach to life as well as science" (1994, 114). In this book, he argues for empiricism as a "stance", from where he addresses questions about science, metaphysics, and religion.

This book consists of five lectures: four of which were delivered in 1999 as Dwight Harrington Terry Lectures on Religion in the Light of Science and Philosophy, and three appendices. The first lays out what van Fraassen sees as the core of empiricism: rebellion against metaphysics. This is what unites empiricisms throughout the ages, despite the varied theories they held. Analytic metaphysics, as inaugurated by Quine, is the object of rebellion in van Fraassen's empiricism. It conceives metaphysics as "an extension of science, putatively pursued by the same means and realizing the same values" (11). It is obvious, then, that this metaphysics presupposes some conception of how science works. The problem, as van Fraassen sees it, is that the analytic conception has not kept up with more recent developments in the field.

Beyond rebellion against metaphysics, is there anything positive offered by empiricists? If that offer is conceived as a set of doctrines or beliefs held by an empiricist, his answer is 'no'. Van Fraassen's rebellion is not only against certain metaphysical beliefs, but the very way philosophy, understood as the producer of theories about the world, is practiced. "[A] philosophical position can consist in something other than a belief in what the world is like. . . [It] can consist in a stance (attitude, commitment, approach, a cluster of such—possibly including some propositional attitudes such as beliefs as well). Such a stance can of course be expressed, and may involve or presuppose some beliefs as well, but cannot be simply equated