Paolo Parrini, Wesley C. Salmon, and Merrilee H. Salmon (eds.), ***Logical Empiricism: Historical and Contemporary Perspectives***. Pittsburgh: University of Pittsburgh Press (2003), 396pp., $49.95 (cloth).

With its seventeen papers roughly evenly divided between European and American scholars, *Logical Empiricism* is a welcome addition to the rapidly growing literature on that movement. It both broadens and deepens our understanding of the logical empiricists themselves. It shows their work often to have been continuous with that of more modern figures. And it explores from a variety of perspectives the connections both between science and philosophy and between the study of historical figures and problems and the ongoing systematic work in the philosophy of science.

All of the papers repay study, though not all are of the same high quality. Even so, enough of them are first rate that I cannot mention even all of those here. Instead, I will highlight a number of themes that the papers illustrate. One such theme is the ongoing revision of our understanding of specific historical figures. This is normal in historical research, but some of the examples here are particularly well done. Michael Friedman's opening paper compares Carnap and Cassirer. These two had a number of features in common. Both were technically able neo-Kantians; each had a full appreciation of Russell's logic of relations and of Einstein's relativity theory; and both were highly systematic philosophers who fashioned their mature views around these developments. Yet these mature views were not the same. Carnap became a part of the logical empiricist movement, while Cassirer remained firmly rooted in the so-called continental tradition. The contrast enriches our understanding—and appreciation—of both men. Friedman's paper is more or less a précis of the second half of his book, *A Parting of the Ways,* so the work is not entirely new. But it is good to have the material in the thus condensed form. A second example of a paper that enriches our understanding of specific historical figures is that by Steve Awodey and André Carus. Gödel may well be the greatest logician of the twentieth—or any other—century, but Awodey and Carus neatly and crisply dispatch Gödel's unpublished argument that Carnap's philosophy of mathematics is incompatible with the famous incompleteness results that Gödel developed. A third example is David Stern's paper on Wittgenstein's *Tractatus*. It is really two papers. The first contains a handy guide to five different schools of *Tractatus*-

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interpretation that have appeared over the years. While Wittgenstein was not strictly a logical empiricist, the Tractatus was enormously influential on their work, and for this and other reasons he was not exactly not part of the group either. The second part of Stern's essay details how Wittgenstein's ideas inspired and informed the so-called Strong Programme in the sociology of science. To the extent that Wittgenstien can be considered part of the logical empiricist movement, this part also illustrates the third theme to be discussed below.

A second theme in *Logical Empiricism* that is worth noting is the fruitful interaction between science and philosophy. The two papers in the philosophy of physics section are cases in point. Thomas Ryckman compares and contrasts Cassirer's and Reichenbach's conceptions of the relativized a priori in physical theory. He argues that Cassirer's was the more promising and fruitful conception. In the process of making this argument Ryckman is forced, with excellent results, to attend closely to the details of the emerging physics and to show the difference that a philosophic orientation makes. Michael Stöltzner's paper covers a wider swath of history and focuses not on just one or two historical actors but on a whole tradition in the understanding of physical theory, namely the Viennese tradition of thinking about indeterministic explanation and causation. That it was distinguishable from other national traditions and that it affected the kind of science and philosophy that was and perhaps could be done raises important questions for those who think that philosophy and science are disembodied and ahistorical as well as for those who think that philosophy and science are best done in isolation.

The book's third and final theme that I shall highlight is the continuity of logical empiricism with our more contemporary concerns. Not so long ago it was standard practice to begin a philosophy paper with a few mindless paragraphs on the evils of logical empiricism. There are, of course, still historically uninformed works that do this—and even historically uninformed histories. But in the standard litany there was no need for more than a crude caricature because the logical empiricists were, or so it was thought, so completely misguided that what they actually said and thought could no longer be relevant to serious ongoing work. No doubt we are all, contemporaries and logical empiricists alike, wrong about a great many things. One of the happy results of recent reexaminations of the logical empiricists is that they really have had something to say that is interesting and useful to their successors. This volume continues those results. Jaegwon Kim, for example, shows that the philosophy of mind of these empiricists is more subtle than the flat-footed philosophic behaviorism usually attributed to them. In fact, Kim argues, the currently respectable (though of course contested) view called functionalism is more nearly what the empiricists, and Carnap in particular, were articulating.

Martin Carrier shows that Clark Glymour's work on confirmation of the 1980's is a fairly direct development of Hempel's work of several decades before. Perhaps this is unsurprising since Glymour studied with Salmon, and both Salmon and Hempel studied with Reichenbach. Still, it does attest to the continuing relevance of the logical empiricists even though many people around, say, 1970 thought the older work had been left behind forever. Finally on this theme, Gürol Irzik compares Carnap and Kuhn. These two thinkers are often thought to be polar opposites, and they do have their differences. In recent years, however, a number of writers, Irzik among them, have noticed striking parallels between the two. In this paper Irzik goes substantially further and uses the comparison to develop wonderfully nuanced pictures of both Carnap and Kuhn on the rationality of scientific theory choice. Irzik not only enriches our understanding of the historical figures and the continuities between them but also forces us to confront the hard issues of rationality as well.

I said earlier that Wittgenstein is neither exactly in nor exactly out of the logical empiricist movement. The same can be said, though for different reasons, of Wesley Salmon. Sadly for us, he died just before this volume was completed. It is fitting, therefore, that it is dedicated to his memory. His roots and training are in that movement, and he is responsible for many of the continuities between its concerns and those of philosophy of science in our own time. But he is also responsible for many of the innovations and improvements that distinguish the two eras. So it is fitting as well that this volume that joins the two eras illuminates them both so well.

RICHARD CREATH, ARIZONA STATE UNIVERSITY