Errol Morris, *The Ashtray (Or the Man Who Denied Reality)*. Chicago and London: University of Chicago Press, 2018. Pp. xv + 207. US$30 (cloth).

Errol Morris is a well-known documentary film-maker and writer. In the early 1970s, Morris was for a time a graduate student in the history of science at Princeton, and later in the philosophy of science at Berkeley. While at Princeton, Morris was a student of T.S. Kuhn. During his time as a student at Princeton, the event which gives the book its name took place. As Morris tells it, he attended a meeting with Kuhn in his office while Kuhn was on leave at the Institute for Advanced Studies. Morris had written a paper on Maxwell's displacement current for Kuhn's seminar. Kuhn was critical of the paper. He found Morris's interpretation of Maxwell to be Whiggish. The discussion turned into an argument. Morris wondered how it was possible even to do the history of science, if present science is incommensurable with past science. At one point, Morris writes, Kuhn 'put his head in his hands and muttered, "He's trying to kill me. He's trying to kill me." Then he looked up and threw the ashtray at me. And missed' (p. 13).

That episode explains the main title of the book. What about the parenthesized sub-title? The description "the Man Who Denied Reality" is clearly intended to apply to Kuhn. It reflects Morris's understanding of Kuhn as propounding an anti-realist view on which reality depends in some way on what scientists think about it. Some of Morris's evidence for such anti-realism derives from well-known Kuhnian claims, such as "we may want to say that after a revolution scientists are responding to a different world" (Kuhn 1962, p. 110). Or, as Kuhn writes in summing up the effects of the incommensurability of paradigms, "the proponents of competing paradigms practice their trades in different worlds" (Kuhn 1962, p. 149). When Kuhn writes in these ways of world-change, he does not deny reality. But he does seem to deny that scientists work in one and the same reality before and after a revolution. It seems closer to the mark to say that Kuhn took there to be a genuine sense in which reality depends in some way on us rather than to say that he denied reality altogether.

Like N.R. Hanson, Kuhn took observation to be theory-laden. Unlike Hanson, Kuhn seemed to move from perception to reference. Indeed, Morris takes one of Kuhn's "central errors" to be the conflation of "perception with reference" (p. 24). Do Brahe and Kepler see the same thing when they observe the sun in the east at dawn? For Hanson, there is a sense in which Brahe and Kepler have the same or similar visual experiences when they look at the sun (Hanson 1958, p. 7). At the same time, there is a sense in which they do not observe the same thing because of the theories and concepts that they bring to bear on the experience (Hanson 1958, pp. 18-9). Still, though observation is theory-laden, what they observe is not. They refer to the same object (i.e. the sun) even though their observation of that object is influenced by different beliefs about it. Here, Morris suggests, is where Kuhn departs from Hanson. For Kuhn, Morris writes, 'People use the same name (e.g., "Earth") but are talking about different things (e.g., Copernican-earth versus Ptolemaic-earth). Same words, different worlds' (p. 24). According to Morris, Kuhn's conflation of perception with reference leads ultimately to a relativistic denial of scientific progress toward the truth about reality. "No progress. No objective truth. No real world" (p. 28).

Saul Kripke presented a lecture at Princeton while Morris was a student there. Kuhn told Morris not to attend, but he attended anyway (pp. 7-8). Morris is an enthusiast for Kripke's

theory of reference (which he distinguishes from Putnam's related view, p. 56). He thinks it offers a way out of Kuhn's relativistic mire. Morris interprets Kuhn as working with a description theory of reference, on which the meaning of a term is given by a description which picks out the reference of the term. "In Kuhn's theory, descriptions and clusters of descriptions multiply without end – one set of descriptions in one paradigm, another set in another paradigm" (p. 27). The result is that the meaning and reference of scientific terms vary with paradigm. By contrast, Morris takes Kripke to deny that terms have a meaning. They only have a reference (p. 27). The role of description is at most to fix the reference of a term rather than to express its meaning. A causal chain links terms to their original introduction at an initial baptism. Morris is right that these ideas about reference once held significant promise as the basis for a response to Kuhn's claims of the variation of meaning and reference. But philosophers of science who have since worked on this problem have tended to think that the causal view of reference is unable to apply in pure form to the terms of theoretical science. It has usually been thought that descriptive content that derives at least in part from theory must play a non-trivial role in securing the reference of theoretical terms.

As Morris recounts the story, the ashtray incident involved Kuhn criticizing Morris's essay on Maxwell for being Whiggish. According to Morris, to approach history of science in a Whiggish fashion was something regularly derided by Kuhn in his seminar: "This is Whiggish; that is Whiggish; everything is Whiggish" (p. 10). Morris explains how the idea of a Whig interpretation traces back to the historian, Herbert Butterfield. For Kuhn and similarly minded historians of science, the message of Butterfield is that the study of a scientist from an earlier period in the history of science is to be approached in terms of the ideas available to the scientist at that time. It is a mistake to understand the work of past scientists in terms of our own contemporary scientific knowledge. Morris contrasts Kuhn's aversion to Whiggishness with the approach favoured by the physicist Steven Weinberg who argues that the historian should understand past science in terms of contemporary science. Here Morris raises an interesting possibility: "Why can't the history of science be both Whiggish and something else – presentist and otherwise?" (p. 156). A case could be made that productive investigation of the history of science might approach past science both in its own terms and from the perspective of modern science. While this is an interesting suggestion, at this point Morris seems to run Kuhn's rejection of the Whig approach to the history of science together with an endorsement of externalist historiography: "If science can only be understood sociologically, then the first order of business, perhaps the only order of business, is to examine the social milieu of science. If it's Lavoisier, look to the milieu of the French Revolution. If it's Einstein, the patent office in Bern. But don't look to the empirical content of science" (p. 156). But to say that the history of science should not be written from the perspective of our contemporary scientific knowledge does not entail that it must be written from the perspective of the externalist who explains the inner workings of science by appeal to non-scientific aspects of the cultural milieu of the scientist. Here, and elsewhere (e.g. p. 3 fn. 5), Morris sees a closer connection between Kuhn and externalist history and sociology of science than is perhaps warranted.

This is a remarkably rich text. There are interviews with such luminaries as Hilary Putnam, Noam Chomsky and Steven Weinberg, among others. There are jokes and anecdotes. Points are illustrated with material drawn from films and literature. The discussion is broad-ranging. Morris chases down historical questions about the discovery of incommensurability

among the Pythagoreans. We are reminded about the Vietnam war protests of the late 1960s and early 1970s. There is detailed discussion of the glyptodont. Jorge Luis Borges, Don Quixote, and even Humpty Dumpty make an appearance. The book is larger format than most academic books on philosophy. The pages are glossy. It is full of photographs and illustrations. It is beautifully bound. Judged by the standards of academic philosophy, there are points on which one might quibble. At one point 'intension' and 'extension' are mistakenly reversed (p. 56). At another point a word refers to a name rather than an object (p. 26). Some quick points are too quick. The book fails to engage with important aspects of the literature. But these are just quibbles. The book is not to be judged by these standards. The appropriate standards are those that apply to a book directed at an interested general audience. And, yet, for all that, both the professional and novice reader will gain something from the book.

References

Hanson, Norwood Russell (1958), *Patterns of Discovery*, Cambridge: Cambridge University Press

Kuhn, Thomas Samuel (1962), *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press