

# Inference to the Best Explanation

A Bibliography Compiled by Timothy McGrew

This brief annotated bibliography is intended to help students get started with their research. It is not a substitute for personal investigation of the literature, and it is not a comprehensive bibliography on this topic. For those just beginning to explore IBE, I suggest the two starred items as good places to start your reading.

Eric Barnes, "Inference to the Loveliest Explanation," *Synthese* 103 (1995): 251-78.

T. Day and H. Kincaid, "Putting Inference to the Best Explanation in its Place," *Synthese* 98 (1994): 271-95.

U. Eco and T. Sebeok, eds., *The Sign of Three: Dupin, Holmes, Peirce* (Bloomington: Indiana University Press, 1983).

K. T. Fann, *Peirce's Theory of Abduction* (The Hague: Nijhoff, 1970).

N. R. Hanson, *Patterns of Discovery* (Cambridge: Cambridge University Press, 1958).

Gilbert Harman, "The Inference to the Best Explanation," *Phil Review* 74 (1965): 88-95.

\_\_\_\_\_, "Detachment, Probability, and Maximum Likelihood," *Nous* 1 (1967): 401-11.

\_\_\_\_\_, "Knowledge, Inference, and Explanation," *American Phil Quart* 5 (1968): 164-73.

Hon and Rakover, eds., *Explanation: Theoretical Approaches and Applications* (Kluwer, 2001).

Tomis Kapitan, "Peirce and the Structure of Abductive Inference," in N. Houser, D. D. Roberts, and J. Van Evra, eds., *Studies in the Logic of Charles Sanders Peirce* (Bloomington: Indiana University Press, 1997), pp. 477-96.

Peter Lipton, *Inference to the Best Explanation* (New York: Routledge, 1991). Now in an extensively revised second edition (Routledge, 2004).

Timothy McGrew, "Confirmation, Heuristics, and Explanatory Reasoning," *British Journal for Philosophy of Science* 54 (2003): 553-67.

Ernan McMullin, *The Inference that Makes Science* (Milwaukee: Marquette University Press, 1992).

\*I. Niiniluoto, "Defending Abduction," *Phil Sci* 66 (Proceedings) (2000): S436-S451.

Stathis Psillos, "On van Fraassen's Critique of Abductive Reasoning," *Philosophical Quarterly* 46 (1996): 31-47.

\*Paul Thagard, "The Best Explanation: Criteria for Theory Choice" *J Phil* 75 (1978): 76-92.

Bas van Fraassen, *The Scientific Image* (Oxford: Oxford University Press, 1980).

\_\_\_\_\_, *Laws and Symmetry* (Oxford: Oxford University Press, 1989).

Harman's three papers kicked off the "IBE" revolution in the mid 1960's, though the roots of the idea go back to Peirce's comments on abductive inference, a connection sketched in the essay by Niiniluoto. The interpretation of Peirce itself presents some difficulty since he changed his views over time. Fann's small book and Kapitan's essay are devoted to untangling some of these issues. The collection edited by Eco and Sebeok contains much useful information pertinent to Peirce's views and comparisons of them with the methodology of Sherlock Holmes. (It also contains a couple of downright weird essays, but these can be skipped.)

Hanson's book contains an extended discussion of abductive reasoning as it pertains to Kepler's discovery of the orbit of Mars. In particular, Hanson argues forcefully against the adequacy of the H-D view of scientific theorizing. Thagard attempts to fill a lacuna in extant accounts of IBE by laying out criteria that appear to have guided scientists in their selection of theories and arguing that these are best seen from the perspective of explanatory inference rather than the H-De model. McMullin's little book traces the history of attempts to give a rational reconstruction to scientific reasoning from Aristotle up through the twentieth century and argues that such reasoning is best seen as an elaborate form of inference to the best explanation in which deductive and inductive reasoning find their proper places.

Bas van Fraassen's two books contain canonical formulations of his criticisms of IBE. The first edition of Lipton's book contained virtually nothing about Bayesian reasoning, but the second edition attempts to fill this lacuna. Several important papers responding to Lipton and van Fraassen appeared between 1993 and 2004, notably the essays by Barnes, Day and Kincaid, and Psillos.

The exchange between Salmon and Lipton in the Hon and Rakover volume is of great importance and gives a sympathetic but somewhat skeptical Bayesian's evaluation of IBE. It is also one of the last things we have from Wesley Salmon before his untimely death. McGrew (2003) attempts to address some of the challenges raised by van Fraassen and Salmon by situating IBE within a broadly Bayesian framework.