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EXPLANATION, UNDERSTANDING AND INFERENCE

Summary

The book "Explanation, understanding and inference" defends a view of scientific explanation, called "inferentialist", and demonstrates the advantages of this view compared with alternative models and analyses of explanation, discussed in the philosophy of science in the last 70 years.

Presented briefly, the defended inferentialist view boils down to the claim that the qualities of an explanation depend on the inferences that it allows us to make. This statement stands on two premises: (a) the primary function of explanations is to bring us understanding of the object being explained, or to deepen the existing understanding; (b) understanding is manifested in the inferences we make about the object of our understanding and its relations with other objects. Hence, one explanation is good, i.e. it successfully performs the function of bringing us understanding, if it allows us to draw inferences that were not available to us before we had this explanation.

The contents of the book include a preface, 11 chapters (divided into 3 parts) and an afterword. The preface introduces briefly the basic idea and its history. Part One presents the main actors of the "Hempel era": Karl Hempel, who launched the contemporary discussion on scientific explanation with his nomological model of explanation, as well as the critics of the Hempel model and the alternative accounts of explanation which they proposed. This part ends with an important observation: those who belong to the era of Hempel either examine the structure of explanation as its basic epistemic characteristic, or break radically with the view that the merits of an explanation depend on any epistemic characteristic. The inferentialist analysis presented in the second part of the book relies on a third approach, which holds the view that the virtues of an explanation depend on certain epistemic features but refuses to examine the structure of explanation as defining its qualities. Instead of the structure of explanation, the inferentialist approach takes as a basic epistemic characteristic the "inferential contribution" – the inferences that one explanation allows us to draw. This part demonstrates the main advantages of the analysis of the inferential contribution to the analysis of the structure of explanations: the inferentialist analysis allows us to answer the questions why and how two explanations having identical structures could be in the same time of different value. In particular, the inferentialist analysis reveals why in some cases a causal explanation is perceived as bad even though it

indicates the real cause of the phenomenon explained. The third part of the book deals with examples from the real history of science and current methodological discussions. What brings these examples from physics, cognitive science, psychology and biology together is that they all show how explanations that extend understanding through the non-trivial inferences they allow of have superseded competing explanations, and in some cases have led to important discoveries that would probably not have been made without them.

The book "Explanation, Understanding and Inference" does not represent a completed project. It rather sketches the idea of an inferentialist analysis of scientific explanation and offers arguments in support of such an analysis. The next steps in implementing the defended inferentialist project are stated in the afterword: these include an inferentialist analysis of mathematical explanations and an analysis of explanatory narratives.