REVIEW

Danneberg, Lutz: *Methodologien, Struktur, Aufbau und Evaluation.* (Erfahrung und Denken. Schriften zur Förderung der Beziehung zwischen Philosophie und Einzelwissenschaften. Bd. 71) Berlin 1989, Duncker & Humblot, 558 p.

This book deals in a comprehensive way with a set of questions central to the philosophy of science: What is the structure of a methodology for the empirical sciences? Which role can a methodology play in science? How can a methodology be justified? The author abstains from discussing particular scientific disciplines and discipline-specific methodologies; he concentrates instead on *general* methodologies. And here he considers mainly the possible relevance of methodologies for constructing and assessing scientific theories. The book has six chapters, which investigate different problems relating to the topic. A bibliography of 122 (!) pages and a name index conclude the volume.

In the *first chapter* Danneberg distinguishes various views regarding the role of methodologies in discovery: views assuming a complete rationalizability of the context of discovery, views claiming only its partial rationalizability, and views denying that the context of discovery can be rationalized at all. A very instructive historical sketch traces these three positions back to antiquity. Danneberg takes the stance that the context of discovery is partially rationalizable. The *second chapter* deals with various attempts to establish that the context of discovery cannot even partially be rationalized. The author discusses several arguments to this effect; I mention an argument from intuition, an argument stressing that a methodology cannot help in finding 'deep-structure' explanatory theories, an argument from the unpredictability of discoveries. Danneberg holds that these arguments rely on unrealistic ideas about what to expect from methodological recommendations. A methodology cannot guarantee truth or success, it just can raise chances for success. In the *third chapter* concepts from the theory of rational choice are used to describe the structure of methodologies and the character of methodological recommendations. It is argued that a gen-

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eral methodology relates not only to the evaluation of theories, but also to their construction. The topic of *chapter IV* is the justification of methodologies. Danneberg takes Popper's methodology as an example. The central question addressed is how the requireme : of falsifiability for empirical theories should be argued for. The failure of attempts to explicate the concept of verisimilitude is considered in its consequences for this question. Danneberg stresses that the problem of explicating verisimlitude is not merely a technical difficulty, but that it is of central importance for the eventual 'justification' of Popper's methodology. Given that the requirement of falsifiability cannot be connected with the aim of discovering the truth via the concept of verisimilitude, falsifiability and truth must be linked by empirical or quasi-empirical assumptions. In this case, however, - Danneberg notes - problems of circularity arise, i.e., when evaluating the empirical assumptions contained in the methodology (as e.g., a theory of learning) we have to presuppose the very methodology. I think that in principle Danneberg is right with this imputation of circularity to empirically founded methodologies. And the circularity is not removed by positing "a definite quality of our cognitive apparatus, here the capacity to determine in a reliable manner the being-the-case or the not-being-the-case of certain states of affairs" (Meyer, 744). An assumption of this kind eventually has to be checked empirically, and this empirical checking is also subject to methodological requirements. Nevertheless, Danneberg should have discussed the problem of circularity in a more detailed way. For circularity seems to come in degrees. For example, deductive-nomological explanations are - as is well known - always circular to a certain degree; and for that they do not cease to be acceptable as explanations. Therefore we have to ask whether the empirical founding of methodologies is circular to an unacceptably high degree. This question, however, is not addressed in the book under review. *Chapter V* first treats older and more recent work on intertheoretical relationships and then investigates theory change and the thesis of incommensurability. These discussions apparently are intended to develop a conceptual apparatus which might serve for eventual methodological evaluations. Danneberg tries to uncover tacit presuppositions of constatations of incommensurability. He cautions us that the constation of the incommensurability of two theories may be the result of the views of interpretation and meaning with which we approach the theories in question. In particular, he shows that "in Kuhn the explicit discussion of assumptions is lacking which

give a guidance to historically adequate interpretations" (317/318). A closer analysis could show that "the assumptions preferred by Kuhn and Feyerabend are problematical and not without alternatives" (323). In *chapter VI* Danneberg analyzes the role of arguments from the history of science in evaluating methodologies. In some detail he discusses the conceptions of Laudan and of Lakatos. Laudan's approach in some parts turns out to be subject to the criticism of circularity, in other parts it insufficiently justifies the aims of a methodology. Danneberg argues against Lakatos that "the question of the existence of a criterion of evaluation ⟨. . .⟩ is not conceived as a question which can be decided by the history of science, but is already decided beforehand" (398). Danneberg then compares the relation of methodology and history of science with the relation between the explication of concepts and pre-analytic judgments. Historical episodes seem to be used for checking a methodology in the same way in which pre-analytical judgments are employed for checking methodologies. I do not understand, however, how and why this analogy between the checking of methodologies and the explication of concepts should be relevant to the justification of methodologies.

This long book more or less explicitly deals with most of the important problems having to do with the general methodology of empirical science. There is one topic, though, which should have been discussed in a study of this scope: namely the relation between methods used in empirical science and methods used in mathematics and other disciplines which apparently are non-empirical. Contrasting a methodology for mathematics and a methodology for the empirical sciences would have thrown the methodology of the empirical sciences in sharper relief. The author, however, remains silent on this aspect of the topic 'methodology'.

Not always does the book under review make for each reading. In part this is because the discussion often takes place exclusively on an abstract level detached from concrete examples. But difficulties in reading are also caused by the symbolism used. Symbols very often are not explained and are not always self-explanatory. For both reasons it is not easy to understand e.g., the parts of chapter III where aims, conditions and means of a methodology are distinguished. Obscure symbolism makes it at times difficult to follow the argument in chapter IV which in general, however, is well written and quite clear. The author in any case, should have furnished an explanatory listing of the symbols

used. - A great virtue of the book is the high quality of documentation. Danneberg for all problems discussed tries to take into account all accessible information. For many topics therefore the book can be used in the function of an encyclopedia in matters methodological. If you want to be briefed on the various arguments against the rationalizability of the context of discovery or on the discussion of verisimilitude or on intertheoretical relations and so on: you find concise summaries of problems and solutions, and in the notes you find the relevant references, not restricted to titles in English language.

REFERENCE

Meyer, Willi: 'Methodologien, Struktur, Aufbau und Evaluation. Ein Literaturaufsatz', *Journal of Institutional and Theoretical Economics* **147** (1991), 740–746.

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