

Chapter 10

The Reductionist's Commitment

Reductionism is the doctrine that we live in a metaphysically unified world, the constituents of which can be presented by various sorts of modes of presentation. Chapter 3 opened the discussion, offering a solution to the puzzle that arises from the slogan that reduction reconciles diversity and directionality with strong unity. This solution suggests that reduction is sensitive to the conceptual contents under which the reducing or reduced object is presented in a true reduction statement. This suggests that diversity is conceptual in nature. Chapter 4 argued that directionality is to be accounted for in terms of reductive explanation, a cognate of mechanistic explanation. Building on the results of Chaps. 3 and 4, Chap. 5 offered an explication of a core notion of reduction in the sense of 'explication' described in Chap. 2. The explication is motivated as follows: It captures the *paradigmatic cases* as well as the *slogan* that reduction reconciles diversity and directionality with strong unity, without relying on elimination. Moreover, to the extent that the explication reflects the results of the discussions of Chaps. 3 and 4, it seems justified. It offers a way to solve the puzzle and to make sense of reductive explanation as a cognate of mechanistic explanation.

The second part of the book offered further motivation for endorsing the explication. Chapter 6 argued that the explication captures and illuminates the use of 'reduction' and its cognates in large parts of the philosophy of mind. However, one may doubt that it does justice to the use of 'reduction' in the philosophy of science. In particular, one may worry that (i) at best, a notion of identity-based reduction, even when construed as an inter-theory relation, plays a minor role in the philosophy of science, and (ii) holistic notions of theory reduction provide the means to deal with the alleged problems all by themselves. Moreover, it has been assumed that notions of theory reduction are to be preferred because they are (iii) less committal, and (iv) more fundamental than the proposal offered here. Chapter 7 argues that (i) is mistaken, thereby paving the way for a discussion of the criticisms expressed by (ii)–(iv) in Chap. 8 and, partly, in Chap. 9. It was argued that identity-based reduction is crucial for an appropriate understanding of models of reduction and replacement in the philosophy of science (against (i)), that there are serious doubts that models of theory reduction provide the means to deal with the problems

discussed here (against (ii)), that it is not the case that these characterizations are less committal – rather, they are equally expensive (against (iii)) – and that the notion explicated here is more fundamental than holistic notions of reduction (against (iv)). In addition, the final Chap. 9 discussed the relevance of the so explicated notion for topics other than those that are directly concerned with reduction, thereby illustrating the fruitfulness of the explication in other contexts.

Thus, the explication captures an important use of the term, it meets the intuitive description and paradigmatic cases, it can deal with alleged problems, it turns out to be more fundamental than its most prominent rival, and it is fruitful not only in the context of reduction debates.

There is a promising way to reconcile descriptive or conceptual diversity with explanatory directionality and unity that is based on identification. On the interpretation of the concept of reduction proposed here, reductionism is committed to the idea that what appear to be different layers of reality are in fact different layers of modes of presentation of reality. Explanatory dependencies among these different levels organize the various reductive hierarchies. The sensitivity to modes of presentation is reflected by conceptions of scientific levels, which inspired a characterization of two notions of physicalism. Reconciling diversity and directionality with strong unity in this way enables us to account for epistemic features of alleged cases of reductions, and ontological, epistemic and explanatory unification are to be expected in reductions. Similarly, once a reduction of one theory to another is achieved, we will come to see that the reducing theory explains the phenomena of the reduced theory, and we gain the resources to explain why the reduced theory worked as well as it did. We can, in the light of the so explicated notion, explain how reduction relates to the pragmatic value of expanding the range of possible intended interventions. The notion of “ontological” reduction proposed here is, in this sense, prior to notions of theory reduction, which tie reductions to holistic features of theories.

Reductionists are committed to the idea that reduction-relations structure the actual world. The explication proposed here gives a coherent picture of what these relations consist in, and it performs better than its rivals. The reductionist's commitment has thus been made explicit.