

PART I

EXPLANATION AND UNIFICATION

The positivists defended the deductive-nomological model of explanation.¹ Some authors have recently approached the topic of explanation from the viewpoint of *unification*.² While there is no agreement among those who make this suggestion about the nature of explanatory unity,³ they do agree that “to explain is to unify” — Kitcher cites E.M. Forster’s injunction: “Only connect” — and argue that the models developed in accordance with this injunction ought to replace the deductive-nomological model which they conceive now to be discredited. What the chapters in this Part attempt to show is that one can accept the Fortserian injunction to “connect” while also accepting the positivist position on explanation.

The first chapter briefly sketches the deductive-nomological model of explanation. This model applies to the explanation of individual facts. But the positivists developed another model of explanation. This second model was that of an axiomatic theory. The point of this was to model the explanation of laws by theories. This model is also presented. Some misunderstandings of both models are dealt with briefly, with the aim of showing that if these misunderstandings are removed then it is not at all implausible to assert that the positivists aimed to meet the Forster injunction of “connect”: the positivist models in fact are models of how one might explain by unification.

Chapter 2 argues in detail that if we refer to forms of laws that are neglected by the critics of the positivist models then many of the standard objections to the positivist model can be dismissed as wrong headed.

Chapters 3 and 4 present two further means by which scientific theories achieve a unification of laws. These are composition laws and reduction.

At this point we shall have developed the basic ideas of explanation that we need and we will then turn to applying them to biology in Parts II and III.