11 The Relevance of Philosophy to Physics

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1 Introduction

My thesis, that philosophy is relevant to physics, is unfashionable, to say the least. This minority view gives me some strange bedfellows: for example, some people with particular religious views who are anxious to make science agree with theology (although primarily their interest is in geology and biology, rather than in physics) [32]. I prefer the company of those philosophers who have been influenced by Sir KARL POPPER' S almost lone defence of the meaningfulness of non-scientific statements — lone, in the sense that POPPER fought in the interests of science [2, 10, 13, 34, 35]. By contrast, the majority view is either a deliberate rejection of philosophy, especially metaphysics, as false (or meaningless or irrelevant), or a simple ignoring of the problems of which philosophy has traditionally been the study. Nevertheless, neither rejecting philosophy nor ignoring it implies that solutions to philosophical problems are not adopted. On the contrary, it is customary for the majority to adopt a stance which is a mixture of various solutions to a number of still puzzling philosophical problems but which interferes as little as possible with scientific work [39]. Furthermore, it is customary to fend off all attempts at serious discussion of those problems in case such discussion should have mischievous effects on the progress of science. This stance is adopted deliberately by some, but implicitly by most. Of course, some metaphysical debates have seriously threatened mischief in science, particularly debates provoked by a clash between theories in science and doctrines in theology; and scientists wish, understandably, to avoid repetition of such affairs [21, 46]. However, the contemporary rejecting (or ignoring) of metaphysics and even of philosophy in general extends the nineteenth century attack on religion in particular in a mischievous manner. Exit the baby with the bath water. In this paper, without disagreeing with the nineteenth century rejection of divine inspiration (if there be any) as a proper source of reliable knowledge (if there be any) in science, I argue in

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favour of the relevance of the study of philosophical problems for physics.

My thesis that philosophy is relevant to physics is unfashionable not only among physicists but also among philosophers. While physicists are supposedly trying to protect themselves from involvement in what they expect to be barren speculative disputes, by their rejection of relevance, many philosophers appear to be trying, by an analogous rejection, to protect themselves from the impact of what they take to be changing fashions in physics (perhaps under the supposition that only unchangeable truths are proper subjects of inquiry for them) and, what is perhaps worse, some of them even appear to be trying to excuse themselves from knowing about physics at all. These remarks do not apply at all to the originators of a very influential school of thought in contemporary philosophy of science, who were very well versed in current theories of science and who aimed at unifying science. This group of men, with the members of the Vienna Circle as leaders, gave a new impetus and a new style to positivism [6, 7, 16, 17, 22, 24]. Officially, they rejected metaphysics, and identified philosophy with logic and methodology. Actually they engaged in the study of methodological problems only after adopting solutions to problems in metaphysics and other branches of philosophy. For example, it was assumed that there was a real world external to the experimenting scientists; that this real world could be more or less accurately and reliably described in gross (macroscopic) terms; and that unobservable entities might be said to exist only insofar as their effects could be observed. The positivist programme of research was then the logical analysis of physical theory in order to reduce the whole body of scientific knowledge to relations between observable terms. Now, I have no objection to the adoption of a metaphysical stance, as such. I do, however, object to any pretence that positivists were not doing metaphysics. That pretence helped to foster the illusion, now widespread, even in the scientific community, that metaphysics especially and philosophy in general is irrelevant to science. This is a very dangerous illusion since it stifles critical debate concerning the assumptions of science, the canons of scientific practice, and the relations of science as a social institution to society in general. The rejection of philosophy, in short, stifles debate about science: science may be practised; apprentice-scientists may be taught their trade (as practised by the masters); the results of science may be used, for better or for worse; but science may not be talked about.

In this paper I hope to give some hint of why science should be talked about by exposing a range of more or less interesting and important philosophical questions.