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POPPER'S VIEWS ON NATURAL
AND SOCIAL SCIENCE

BY

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INTRODUCTION

There is no more to science than its method, and there is no more to its method than Popper has said.

Hermann Bondi

In this book I try to give a straightforward, connected and up-to-date account of Sir Karl Popper's leading ideas about scientific method, paying special attention to their relevance to social theory. That emphasis is natural for one who is an economist rather than a philosopher.

My reason for writing it arises from a conviction that his original ideas are still not widely understood, still less properly appreciated, in spite of his presentations of them, over almost six decades, in many articles and books that are remarkable for vigour and clarity of writing. One might expect that his fellow philosophers would have read them properly but that is seldom the case, as becomes evident from reading his 'Replies to My Critics' in *The Philosophy of Karl Popper*; see, for example, his remarks on 'the Popper legend'. I share the impression of Bartley¹ and Medawar² that opinions about Popper's methodology have too often been formed not so much from his own writings as from incomplete and partial expositions of his ideas by critics or revisionists³.

There has been neglect rather than misunderstanding of Popper's work by natural scientists, although he has been primarily interested in the growth of scientific knowledge in physics and biology. Bartley laments the lack of fruitful dialogue between Popper and physicists, notwithstanding some notable exceptions, which include Einstein, Schrödinger, Bondi and Margenau.⁴ Popper has had more luck with biologists, including the physiologist Eccles and the medical scientist Medawar, both Nobel prize winners, the biochemist Wächtershäuser, and the psychologist Campbell. His general contribution to scientific thinking, moreover, has been acknowledged by election to the Royal Society, as well as to a number of foreign academies of science, and by the award of prestigious international prizes.

¹ Paul Levinson (*editor*), *In Pursuit of Truth*, pp. 268–75. See also similar remarks by I.C. Jarvie, *idem*, pp. 100–103.

² *Memoirs of a Thinking Radish*, pp. 114–15.

³ e.g. Ayer, Feyerabend, Harré, Kuhn, Lakatos or Williams.

⁴ *Philosophia*, 1978, p. 677.

Nor have his ideas been adequately appreciated or understood by social theorists. His main concern, admittedly, has been with physics and biology, and he has confessed that the only social science which had ever interested him was economics. But his general work on methodology has considerable relevance to the problems of social analysis, and he has written two important books which deal exclusively with social science. *The Open Society and Its Enemies* was first published in 1945 and *The Poverty of Historicism* in 1957, following its appearance as three articles in *Economica*, 1944–45. A few articles bearing on social science were published later, the last in 1967, after which he appears to have lost interest in its problems.

Popper's first book, the *Logik der Forschung*, had appeared in 1935 and immediately attracted a good deal of attention, so that he received, and accepted, foreign invitations to speak about it. A few economists also read it. Terence Hutchison did while studying at Bonn, and used it for his own first book, *The Significance and Basic Postulates of Economic Theory* (1938). Gottfried Haberler also read it, at Harvard, and recommended it to Hayek, who then invited Popper to address his seminar at the London School of Economics. There he spoke formally about methodological problems in social science. This lecture was developed into *The Poverty of Historicism* in New Zealand, where Popper taught from 1937 to 1945. Influenced by the *Logik* and by this lecture, Hayek wrote an important article, 'Economics and Knowledge' in *Economica* (1937), which Hutchison claimed⁵, perhaps exaggeratedly, is a vital turning point in Hayek's ideas about epistemology.

In New Zealand, Popper also wrote *The Open Society*, and it was published in England shortly before his arrival at the LSE to take up a teaching post which he held until his retirement in 1969. This book came out a year after Hayek's *The Road to Serfdom*, and both were widely read and discussed. Independently written, they attracted attention because of different yet complementary exposures of the intellectual roots and direful consequences of totalitarian influences, powerful even after the collapse of Nazi Germany and Fascist Italy.

Social thinkers thus became aware of Popper's emphatic rejection of ideas that there are inevitable historical laws which determine social developments, which could help us to predict such developments, and which it is the task of social science to

⁵ *The Politics and Philosophy of Economics*, 1981, p. 215.

discover. They would also have become aware of his advocacy of 'piecemeal social engineering' as against holistic or collectivist central planning.

But his constructive attacks on historicism and collectivism were strongly resented by various Platonists, Hegelians, Marxists, sociologists of knowledge, and wholesale planners, so that there were polemical arguments and misunderstandings which have long obscured or distorted the transmission of his ideas. Similar troubles arose from his vigorous exposures of the poverty of the logical positivist and linguistic schools of philosophy, then dominant and especially in Britain.

It was not until 1959 that *The Logic of Scientific Discovery* was published as an English translation and extension of the *Logik der Forschung*. The twenty-four year delay was unfortunate in that it gave time for much indirect and garbled reporting of Popper's basic ideas among those who could not read German or obtain a copy of the now very scarce *Logik*. Still more unfortunate was an even longer delay in publishing a most important *Postscript to the Logic of Scientific Discovery*. This had been sent to a publisher in 1956, but serious eye trouble prevented Popper from completing proof reading. The galley proofs circulated among his colleagues at the LSE, who made some use of them; but the *Postscript* did not appear until Bartley published it as three volumes. *The Open Universe* and *Quantum Theory and the Schism in Physics* both appeared in 1982, and *Realism and the Aim of Science* a year later. They surpass even the *Logic* in philosophical or scientific interest, and include an exposition of his original idea about metaphysical research programmes. But they came much too late to prevent widespread acceptance of misleading versions or critiques of his thought.

Between the *Logic* and the *Postscript* Popper published three other books. *Conjectures and Refutations* (1963) and *Objective Knowledge* (1972) are collections of essays, written at various dates and containing further developments of his epistemological and methodological themes. Of particular interest to social theorists are articles in the former on tradition (Ch. 4), social prediction (Ch. 16), liberalism (Ch. 17), and humanism and reason (Ch. 20). The last chapter of *Objective Knowledge* is a 'Realist View of Logic, Physics and History'. In 1977 he collaborated with Sir John Eccles, the eminent physiologist, in writing *The Self and Its Brain*, which thoroughly explores the body-mind problem, an old puzzle in philosophy and one relevant to psychology. Finally there is a paper which Popper read to Haberler's seminar in Harvard during

1963, 'Models, Instruments and Truth', a condensation of which was prepared by a colleague, Alan Musgrave, and published later in a book of essays honouring Jacques Rueff. An English translation of this French article appears under the title of 'The Rationality Principle' in David Miller's excellent book of selections, *A Pocket Popper*. It is an illuminating and suggestive account of the kind of scientific theorizing that does not use specific causal laws.

In the last few years Popper has taken, and given addresses on, what he calls 'a new view of causality' based on his propensity theory of probability. It has led him to the metaphysical view of an indeterminate and evolving cosmos, subject generally to only 'weak causality'. These ideas about probability and indeterminacy, first developed in connection with physics, have obvious relevance to biological and social sciences, relying as they do on statistical methods.

All this provides a wide range of insights for social theorists, yet they have seldom shown much comprehension of the earlier works, as L.A. Boland has often observed⁶, and they have hardly noticed the later ones. Mark Blaug, for example, in his *The Methodology of Economics*, devotes seventeen pages to a sympathetic account of Popper's views on falsification, induction and corroboration but ignores other contributions, more relevant to social theory, such as historicism, piecemeal engineering, theoretical models and metaphysical research programmes. Nor, in discussing other methodological positions, does he notice Popper's more effective criticisms of them. Blaug also makes the revealing claim⁷ that although Popper has had a great influence on modern economists few of them have read him, but gained such understanding as they have of his ideas indirectly and from Milton Friedman's *Essays in Positive Economics*. If so, they have gained it from one who shows imperfect knowledge, or else limited acceptance, of Popper's methodology⁸.

Bruce Caldwell's *Beyond Positivism* (1982) provides another example. He devotes more space to Popper's ideas than Blaug does, but covers no more of them. His understanding of them is not enough to stop him from advocating a confused 'methodological pluralism' that denies the objectivity of economic analysis. Neither does his discussion of Kuhn and Lakatos notice Popper's

⁶ Particularly in *The Foundations of Economic Methodology*, 1982.

⁷ In his well-regarded *Economic Theory in Retrospect*, (1978), p. 714.

⁸ See Popper's *Conjectures and Refutations*, p. 245, for a clear denunciation of Friedman's instrumentalist methodology.

criticisms of their arguments, nor recognize that Lakatos' 'scientific research programmes' are a distorted derivation from Popper's metaphysical research programmes. But then his extensive bibliography did not list *The Philosophy of Karl Popper*, which he showed no sign of having read.⁹

Not that these two examples are by any means the worst. They are given only to illustrate the need for a better and fuller explanation of Popper's ideas to social scientists. A further reason for the need is that these ideas and their developments are spread over a range of writings separated by wide time intervals, and are sometimes partly obscured by distracting polemical or historical material.

It has seemed worthwhile, therefore, to attempt bringing them together in a systematic way and as simply as accuracy permits. Some attention is paid to predecessors who had similar ideas, or who influenced Popper's thinking, positively or negatively. Part One offers an account of his writings on general scientific method, concluding with a fuller account of his pioneering work on evolutionary epistemology, his view of indeterminism, and his important critique of quantum theory which has been the major influence on his views about probability and indeterminism.

Part Two covers what he has written about the application of his general methodology to social theory, and about the distinctive problems of analyzing social phenomena. It pays more attention to anticipations and criticisms of Popper's ideas, although still trying not to let their discussion become unduly distracting. The penultimate section considers criticisms that economists have made of Popper's ideas in a recent seminar which was held exclusively for that purpose, and it concludes with my own evaluation of what economists may learn from Popper. Two appendices have been added about the genesis of *The Open Society* and about the relation between his and Hayek's views on 'piecemeal social engineering'; the first is an article which I wrote for the Australian quarterly, *Quadrant*, and the second is a shortened version of a paper given to the Christchurch Meeting of the Mont Pelerin Society in 1989 and later also published in *Quadrant*.

⁹ Since then he appears to have read it as it appears in the bibliography to his article 'Clarifying Popper', which was published in the *Journal of Economic Literature* in March 1991. In this article he claims that, following the Nafplion conference sponsored by the Latsis Foundation in 1974, Friedman's instrumentalism dropped out of discussions about economic methodology and interest developed in Lakatos' scientific research programmes, especially in those aspects which most separate his thought from Popper's, Blaug playing a major role in this development (pp. 10-12).

There is also a third appendix summarising advice Popper has recently given to readers of the Russian edition of *The Open Society* (to be published in 1993).

The main results of the book might be very summarily indicated by twelve theses.

- (i) Science has developed from metaphysics and has become increasingly different from it by putting theories into a logical form that allows them to be empirically tested. Yet metaphysical elements can never be completely purged from scientific theories, and some metaphysical ideas have often usefully guided scientific research.
- (ii) There is neither a deductive nor an inductive path to scientific understanding of phenomena, natural or social.
- (iii) The only sound way towards such an understanding is by bold conjectures about problem situations, and severe testing of these conjectures, logically and empirically.
- (iv) Scientific theories are thus always provisional, liable to replacement by more informative theories which survive, for a while, rigorous tests.
- (v) It is exceptional for these theories to be exact causal laws; they are rather probabilistic.
- (vi) Probability is not a reflection of human ignorance but a propensity of objective situations to generate frequency distributions of events generated by those situations.
- (vii) The universe is not fully deterministic but is evolving to create new situations and, in that sense, continually opens up new possibilities and so changes propensities.
- (viii) Social scientists have no hope of finding historical laws of development, nor of providing any rational basis for comprehensive social planning.
- (ix) They should give up attempts to emulate the physical sciences by searching for timeless causal laws.
- (x) If there are social laws, these must be probabilistic, but they cannot be established by any appeal to so-called inductive probability.
- (xi) Nevertheless we can reach scientific explanations of social phenomena by using models of social situations together with a very weak rationality principle which avoids the ambiguities of psychological theorising.
- (xii) Such explanations can be greatly helped by piecemeal social engineering that addresses practical social problems in a scientific way.

Although conscious of personal deficiencies for attempting this kind of exposition, I have had the advantage of a close personal friendship with Karl Popper since 1939 and, particularly in more recent years, have had valuable discussions with him on most of the problems tackled here. I am also grateful to a younger friend, Rafe Champion, whose great interest in, and understanding of, Popper's work have been very helpful to me throughout the writing of this book.