
Contents

Preface	xi
1 The Politics of the Philosophy of Science	1
1.1 Philosophy of science as a political issue	1
1.2 The positivist strategy	3
1.3 Historically contingent methods and standards	6
1.4 The critique of pseudoscience	8
2 Against Universal Method	11
2.1 Introductory remarks	11
2.2 The appeal to human nature	12
2.3 The appeal to physics and its history: positivism and falsificationism	13
2.4 Variable methods and standards in physics	20
2.5 Note	23
3 The Aim of Science	24
3.1 Introductory remarks	24
3.2 Science as a quest for generality	26
3.3 Early attempts to establish theoretical generalizations	29
3.4 Generality and experiment: Galileo	34
3.5 The substitution of growth for certainty	36
3.6 The aim of science	38
3.7 Notes	40

4	Observation Objectified	41
4.1	Empiricist assumptions under attack	41
4.2	The theory-dependence of observation	42
4.3	Objective observation as a practical achievement	46
4.4	The significance and problematic character of Galileo's telescopic data	50
4.5	Galileo's observations of Jupiter's moons	54
4.6	Planetary sizes as viewed through the telescope	56
5	Experiment	61
5.1	The production and rejection of experimental results	61
5.2	Implications for empiricism	66
5.3	Implications for Popperian philosophy of science	67
5.4	Defending experiment from sceptical attack	70
5.5	The experimenter's regress	72
6	Science and the Sociology of Knowledge	80
6.1	Sociology and scepticism about science	80
6.2	The sociologists' inadequate portrayal of their opponents	82
6.3	The social origins of scientific knowledge	86
6.4	The inappropriate emphasis on belief	89
6.5	Sociological explanation restricted to bad science	91
7	Two Sociological Case Studies	96
7.1	Statistical theory and social interests	96
7.2	Freudenthal's social explanation of Newton's <i>Principia</i>	104
7.3	Concluding remarks	112
7.4	Note	113
8	The Social and Political Dimension of Science	115
8.1	Introductory remarks	115
8.2	Objective opportunities and individual choice	116
8.3	The politics of scientific practice	120
8.4	Cutting science down to size	122
8.5	Note	125

Appendix	The Extraordinary Prehistory of the Law of Refraction	126
Bibliography		133
Author Index		140