

Cambridge University Press 978-0-521-31642-2 - Realism, Rationalism and Scientific Method: Philosophical Papers, Volume 1 Paul K. Feyerabend Table of Contents More information

Contents

	Introduction to volumes 1 and 2	ix
	PART I ON THE INTERPRETATION OF SCIENTIFIC THEORIES	1
1	Introduction: scientific realism and philosophical realism 1 Historical background 2 Types of realism	3 3 5
	3 Maxwell and Mach	11
	4 The double language model	13
	5 Incommensurability	15
2	An attempt at a realistic interpretation of experience	17
	1 Introduction	17
	2 Observation languages	17
	3 The stability thesis	20
	4 Pragmatic meaning; complementarity	21
	5 Phenomenological meaning	24
	6 Refutation of the stability thesis: 'everyday language'	29 33
	7 The logical basis of the arguments in section 6	33
3	On the interpretation of scientific theories	37
4	Explanation, reduction and empiricism	44
	1 Two assumptions of contemporary empiricism	47
	2 Criticism of reduction or explanation by derivation	55
	3 The first example	57
	4 Reasons for the failure of (5) and (3)	59
	5 Second example: the problem of motion	62
	6 Methodological considerations	69
	7 Criticisms of the assumption of meaning invariance	76
	8 Summary and conclusion	91
5	On the 'meaning' of scientific terms	97
6	Reply to criticism: comments on Smart, Sellars and Putnam	104
	1 Proliferation	104
	2 Strong alternatives	109
	3 A model for progress	110



Cambridge University Press 978-0-521-31642-2 - Realism, Rationalism and Scientific Method: Philosophical Papers, Volume 1 Paul K. Feyerabend Table of Contents More information

vi	CONTENTS	
	4 Consistency 5 Meaning invariance 6 The historical question 7 The methodological question 8 Observation 9 The physiological question	111 113 118 119 124 127
7	Science without experience	132
	PART 2 APPLICATIONS AND CRITICISMS	137
8	Introduction: proliferation and realism as methodological principles	139
9	Linguistic arguments and scientific method	146
10	Materialism and the mind-body problem	161
11	Realism and instrumentalism: comments on the logic of factual support 1 Explanation of concepts 2 The distinction is not purely verbal 3 Aristotelian dynamics 4 Consequences for the motion of the earth 5 The instrumentalist interpretation of the Copernican theory 6 Philosophical arguments for this interpretation are not the only ones 7 The quantum theory: Bohr's hypothesis 8 In the quantum theory, too, philosophical arguments for instrumentalism are not the only ones 9 The interpretation of wave mechanics 10 Common features of the Copernican case and the quantum case 11 The force of empirical objections 12 Contradiction of old facts and new ideas is no argument against the latter 13 Objections against a certain way of treating the contradiction 14 Treated correctly, the contradiction can be maintained for a considerable time 15 An argument for maintaining the contradiction 16 Realism is always preferable to instrumentalism	186 191 194 195 196 197 199 200 201
12	A note on the problem of induction	203
	On the quantum theory of measurement 1 The problem 2 Von Neumann's theory of measurement 3 Stages of measurement 4 Difficulties 5 The classical level 6 Conclusion	207 207 208 210 212 213 216



Cambridge University Press 978-0-521-31642-2 - Realism, Rationalism and Scientific Method: Philosophical Papers, Volume 1 Paul K. Feyerabend Table of Contents More information

	CONTENTS	vii
14	Professor Bohm's philosophy of nature	219
15	Reichenbach's interpretation of quantum mechanics	236
	l Three-valued logic and contact-action	236
	2 Exhaustive interpretations and their anomalies	237
	3 Anomalies and the principle of contact-action	240
	4 The position of laws in the suggested interpretation	241
	5 The Copenhagen Interpretation	242
	6 Arguments against it considered	243
	7 Formalization	245
16	Niels Bohr's world view	247
	1 Introduction	247
	2 Propensity: a part of complementarity	248
	3 Measurement: classical limit	252
	4 The relational character of quantum-mechanical states	260
	5 Trajectories in classical physics and in the quantum theory	261
	6 A sketch of Bohr's point of view	269
	7 The uncertainty relations	282
	8 Refutations of two objections	286
	9 The case of Einstein, Podolsky and Rosen	292
	10 Conclusion: back to Bohr!	293
17	Hidden variables and the argument of Einstein,	
	Podolsky and Rosen	298
	1 The argument	298
	2 Superstates	304
	3 The relational character of the quantum-mechanical states	308
	4 Complementarity	314
	5 Von Neumann's investigations	326
	6 Observational completeness	328
	7 Measurement	333
	Sources	343
	Name index	344
	Subject index	349