

Contents

Preface ix

1 A peculiar institution 1

- 1.1 Defending a legend 1
- 1.2 Science as it is and does 2
- 1.3 A peculiar social institution 4
- 1.4 A body of knowledge 5
- 1.5 Naturalism in the study of Nature 6
- 1.6 Keeping it simple 8

2 Basically, it's purely academic 12

- 2.1 Framing the indefinable 12
- 2.2 Narrowing the frame 13
- 2.3 Research as inquiry 14
- 2.4 Science in the instrumental mode 15
- 2.5 Basic research as a policy category 17
- 2.6 Fundamental knowledge as an epistemic category 19
- 2.7 Out of pure curiosity 22
- 2.8 Academic science as a culture 24
- 2.9 Many disciplines in one science 25

3 Academic science 28

- 3.1 The republic of learning 28
- 3.2 Elements of the scientific ethos 31
- 3.3 Communalism 33
- 3.4 Universalism 36
- 3.5 Disinterestedness, humility 38
- 3.6 Originality 40

- 3.7 Scepticism 42
- 3.8 CUDOS institutionalized 44
- 3.9 Specialization 46
- 3.10 Avocation 49
- 3.11 Science in society 52

4 New modes of knowledge production 56

- 4.1 The academic mode 56
- 4.2 Is science to be believed? 58
- 4.3 What is happening in science? 61
- 4.4 The advent of post-academic science 67
- 4.5 An undramatic revolution 68
- 4.6 Collectivization 69
- 4.7 Limits to growth 71
- 4.8 Exploiting knowledge 72
- 4.9 Science policy 74
- 4.10 Industrialization 77
- 4.11 Bureaucratization 79

5 Community and communication 83

- 5.1 What sort of knowledge? 83
- 5.2 What are the facts? 85
- 5.3 Eradicating subjectivity 87
- 5.4 Quantification 88
- 5.5 Instruments 90
- 5.6 Experiment 93
- 5.7 Trust 96
- 5.8 Verification 98
- 5.9 The personal element 102
- 5.10 We are not alone 105
- 5.11 Empathy 107
- 5.12 Modes of communication 109
- 5.13 Networking intellectual property 113

6 Universalism and unification 117

- 6.1 Generalization and abstraction 117
- 6.2 Classifying the 'facts' 118
- 6.3 Systematics 122
- 6.4 Theories as maps 126
- 6.5 Maps as theories 128
- 6.6 Formalization 132

- 6.7 Mathematics 137
- 6.8 Rationality 141
- 6.9 Systematization 144
- 6.10 Models and metaphors 147
- 6.11 Scientific domains 151

7 Disinterestedness and objectivity 155

- 7.1 Striving towards objectivity 155
- 7.2 What makes science 'interesting'? 156
- 7.3 What makes science reliable? 157
- 7.4 Interests and values 161
- 7.5 Social interests in the natural sciences 163
- 7.6 But who sets the research agenda? 165
- 7.7 Disinterestedness in the human sciences 166
- 7.8 Free from interests – or free to be interested? 170
- 7.9 Problem solving in the context of application 172
- 7.10 Objectivity or emancipation? 177

8 Originality and novelty 182

- 8.1 Problems 182
- 8.2 Projects 185
- 8.3 Specialties 189
- 8.4 Disciplines and their paradigms 192
- 8.5 Getting down to fundamentals 198
- 8.6 Normal science 200
- 8.7 Who sets the problems? 204
- 8.8 Interdisciplinarity 209
- 8.9 Discovery 213
- 8.10 Hypotheses 218
- 8.11 Prediction 225
- 8.12 Hypothetical entities 229
- 8.13 Constructivism 232
- 8.14 What do scientists have in mind? 239

9 Scepticism and the growth of knowledge 246

- 9.1 The agonistic element 246
- 9.2 Consensus – or just closure 253
- 9.3 Codified knowledge 258
- 9.4 Getting things wrong 266
- 9.5 Mysteries, marvels and magic 269
- 9.6 Epistemic change 273

9.7 The evolutionary analogy 276

9.8 Complexity and progress 282

10 What, then, can we believe? 289

10.1 Understanding and explanation 289

10.2 Life-world knowledge 292

10.3 The epistemology of the life-world 296

10.4 Cultural contexts 302

10.5 Sciences, religions, and other belief systems 306

10.6 Science and common sense 313

10.7 Realism 316

10.8 Unified by reduction 321

10.9 Post-academic knowledge 327

Endnotes 331

Bibliography and author index 356

Index 385