CONTENTS

Preface xi
Introduction 1

One A Mistaken View of the Incompleteness of Science 5

1. The Something-Is-Always-Left-Out Argument 5
2. The Case of Fact-Explanations: Local Explanatory Omissions Do Not Entail Global Inexplicability 6
3. The Case of Laws: The Systemic Character of Law Explanation 10
4. The Case of the System as a Whole: Transcending Circularity 12
5. Descriptive Incompleteness: The Infeasibility of Characterizing All Particular Facts 14

Two Question Dynamics and Problems of Scientific Completeness 18

1. The Role of Presuppositions 18
2. Question Dissolution 22
3. Kant's Principle of Question Propagation 27
4. Cognitive Completeness: Question-Answering (or "Erotetic") Completeness 31

Three Questions and Scientific Progress 35

1. Question Dialectics and Scientific Progress 35
2. The Lessons of History 40
3. The Pragmatic Dimension of Progress 44

Four The Potential Limitlessness of Science 47

1. The Potential Limitlessness of Scientific Change 47
2. The Role of Cognitive Limits 54

Five Against Convergentism 60

1. The Diminishing-Returns View of Scientific Progress and Its Flaws 60
2. A Critique of the Self-Correction Thesis 62
3. The Instability of Science: The Role of Conceptual Innovation 68
4. Scientific Changes Maintain a Uniform Level of Significance 74

Six The Instability of Science 77

1. The Comparative Fragility of Science: Scientific Claims as Mere Estimates 77
2. Fallibilism and the Distinction Between Our (Putative) Truth and the Real Truth 83
3. Cognitive Copernicanism 86
4. The Problem of Progress 88

Seven The Unpredictability of Future Science 95

1. Transition 95
2. Difficulties in Predicting Future Science 96
3. Present Science Cannot Speak for Future Science 101
4. The Plasticity of Science 104
5. Against Domain Limitations 109

Eight Against Insolubilia 112

1. The Idea of Insolubilia 112
2. The Reymond-Haeckel Controversy 114
3. Some Purported Scientific Insolubilia 118
4. The Infeasibility of Identifying Insolubilia 127

Nine The Theoretical Unrealizability of Perfected Science 133

1. Conditions of Perfected Science 133
2. Theoretical Adequacy: Issues of Erotetic Completeness 135
3. Pragmatic Completeness 140
4. Predictive Completeness 143
5. Temporal Finality 145
6. The Dispensability of Perfection 148
7. "Perfected Science" as an Idealization that Affords a Useful Contrast Conception 150
8. Science and Reality 153

Ten The Practical Infeasibility of Perfecting Science 160

1. Technological Escalation 160
2. Rising Costs 166
3. Economic Requirements Spell Economic Limitations 168

Eleven Extraterrestrial Science 174

1. Could Science in Another Setting Overcome the Limitations of Our Human Science? 174
2. The Potential Diversity of "Science" 176
3. The One-World, One-Science Argument 183
4. Comparability and Judgments of Relative Advancement 187

5. First Principles 192
6. The Implausibility of Being Outdistanced 197

Twelve The Limited Province of Natural Science 206

1. Knowledge as One Good Among Others 207
2. Scientific Knowledge as One Mode of Knowledge 208
3. The Autonomy of Science 215
4. Conclusion 217

Name Index 219
Subject Index 223