Contents

	List of Contributors Preface	<i>page</i> ix xi
1	Introduction RADIN DARDASHTI, RICHARD DAWID, AND KARIM THÉBAULT	1
	Part I Historical and Conceptual Background	
2	Fundamental Theories and Epistemic Shifts: Can the History of Science Serve as a Guide? HELGE KRAGH	ce 13
3	Scientific Speculation: A Pragmatic Approach PETER ACHINSTEIN	29
4	Assessing Scientific Theories: The Bayesian Approach RADIN DARDASHTI AND STEPHAN HARTMANN	67
5	Philosophy of Science and the String Wars: A View from the Outside MASSIMO PIGLIUCCI	84
	Part II Theory Assessment beyond Empirical Confirmation	
5	The Significance of Non-Empirical Confirmation in Fundament Physics RICHARD DAWID	al 99
7	The Dangers of Non-Empirical Confirmation CARLO ROVELLI	120
8	No Alternative to Proliferation DANIELE ORITI	125

vii

viii Contents

9	Physics without Experiments? RADIN DARDASHTI	154
10	Scientific Methodology: A View from Early String Theory ELENA CASTELLANI	173
11	What Can We Learn from Analogue Experiments? KARIM THÉBAULT	184
12	Are Black Holes about Information? CHRISTIAN WÜTHRICH	202
	Part III Cosmology and Testability	
13	The Limits of Cosmology JOSEPH SILK	227
14	The Role of Cosmology in Modern Physics BJÖRN MALTE SCHÄFER	253
15	Theory Confirmation and Multiverses GEORGE ELLIS	275
16	Beyond Falsifiability: Normal Science in a Multiverse SEAN M. CARROLL	300
17	Gaining Access to the Early Universe CHRIS SMEENK	315
	Part IV Prospects for Confirmation in String Theory	
18	String Theory to the Rescue JOSEPH POLCHINSKI	339
19	Why Trust a Theory? Some Further Remarks JOSEPH POLCHINSKI	354
20	The Dangerous Irrelevance of String Theory EVA SILVERSTEIN	365
21	String/M-Theories about Our World Are Testable in the Traditional Physics Way GORDON L. KANE	377
22	Is String Phenomenology an Oxymoron? FERNANDO QUEVEDO	400
	Index	434