The dynamics of scientific theories.

Structuralism and the logical-formal understanding of Kuhn's epistemology

Contents

Preface, by Carl Ulises Moulines			9
Introduction		»	15
1.	The structuralist model and the logical understanding of the dynamics of theories	»	23
1.1	Descriptive contexts	»	23
1.1.1	Core and intended applications of theories	»	23
1.1.2	Theory models and constraints	»	31
1.1.3	Frame, core, and expanded core	»	35
1.2	Theories as set-theoretical structures	»	39
1.3	Scientific theories and temporality	»	48
1.4	The axiomatization of theories on the basis of CPM system	»	51
1.4.1	Theoretical models and constraints	»	51
1.4.2	Empirical claims of theories	»	56
1.4.3 1.5	The axiomatic method	»	59 63
1.5.1	The problem of theoretical terms Explanation of the problem	» »	63
1.5.1	Sneed's hypothesis	»	66
1.5.3	Stegmüller's hypothesis	»	75
1.6	Summary	»	84
2.	The dynamics of theories as dynamical non cumulative advancing		
	of normal science and scientific revolutions	»	87
2.1	The constitutive process of the phenomenal world	»	87
2.2	Paradigms and disciplinary matrixes	»	95
2.2.1	The notion of paradigm and of disciplinary matrix	»	95
2.2.2	Applications of a theory in the Kuhnian sense	»	98
2.3	Dynamics of theories, normal science and scientific revolutions	»	99
2.3.1	Normal science as puzzle-solving practice	»	99
2.3.2	The emergence of anomalies: the <i>extraordinary</i> science	»	102
2.3.3 2.4	The nature of scientific revolutions	»	105
2.4 2.5	Incommensurability, incomparability and discontinuity Epistemic progress and scientific revolutions	» »	107 114
3.	Reconsidering the core aspects of Kuhn's epistemology		
	through set-theoretical predicates	»	117
3.1	Kuhn's theory of science in critical perspective	»	117
3.2	Stegmüller's analysis of the notion of paradigm	»	120
3.2.1	Wittgenstein's notion of game	»	120
3.2.2	Kuhn's notion of paradigm	»	122
3.3	Intended applications	»	125

3.3.1	Estensional and intensional descriptions	p.	125
3.3.2	The Kuhnian acceptance of a physical theory	»	128
3.4	Normal science and scientific revolutions	»	130
3.4.1	The static nature of normal science	»	130
3.4.2	Basic theories vs. derived theories	»	133
3.4.3	Paradigmatic cases of theory replacement	»	134
3.4.4	Dynamical reduction of theories	»	137
3.4.5	The logic of theory change in the dynamics of sciences	»	141
3.5	Post-rationalism and pseudo-relativism of Kuhn's epistemology	»	145

4.	On pragmatic and informal semantics		»	151
4.1 4.2 4.3 4.4	Informal semantics as necessary integration of Bourbaki's program Pragmatic evolution of theories Scientific advances and rationality Formal appendix	» » »	151 155 158 166	
Conclusion		»	173	
References »		»	179	