Contents

Prefe	Preface	
Acknowledgements		XV
List of figures		xvii
List	of tables	xix
List	of most common acronyms	XX
Cha	pter 1—What is the philosophy of information?	1
	Summary	1
1.1	Introduction	1
1.2	Philosophy of artificial intelligence as a premature paradigm of PI	2
1.3	The historical emergence of PI	5
1.4	The dialectic of reflection and the emergence of PI	7
1.5	The definition of PI	13
1.6	The analytic approach to PI	17
1.7	The metaphysical approach to PI	19
1.8	PI as philosophia prima	24
	Conclusion	25
Cha	pter 2—Open problems in the philosophy of information	26
	Summary	26
2.1	Introduction	26
2.2	David Hilbert's view	28
2.3	Analysis	30
2.4	Semantics	33
2.5	Intelligence	35
2.6	Nature	42
2.7	Values	44
	Conclusion	45
Cha	pter 3—The method of levels of abstraction	46
	Summary	46
3.1	Introduction	47
	Some definitions and preliminary examples	48
	3.2.1 Typed variable	48
	3.2.2 Observable	48
	3.2.3 Six examples	49

53 54 58 60 60 61 61 63 63
58 60 60 61 61 62 63
60 61 61 62 63
60 61 62 63
61 61 62 63
62 63
62 63
63
67
65
66
66
67
68
69
71
74 75
76
78
70
80
80
80
82
83
85
86
87
90
91
92
93
97
98
99
100

	4.12.3 Third step: Excluding contradictions	100
	4.12.4 Fourth step: Excluding inconsistencies	101
	4.12.5 Last step: Only contingently true propositions count as	
	semantic information	103
4.1	3 The definition of semantic information	104
	Conclusion	106
Ch	apter 5—Outline of a theory of strongly semantic information	108
	Summary	108
5.1	Introduction	109
5.2	The Bar-Hillel-Carnap Paradox	111
	Three criteria of information equivalence	114
	Three desiderata for TSSI	117
5.5	Degrees of vacuity and inaccuracy	117
	Degrees of informativeness	123
	Quantities of vacuity and of semantic information	125
	The solution of the Bar-Hillel–Carnap Paradox	127
	TSSI and the scandal of deduction	129
	Conclusion	132
Cha	apter 6—The symbol grounding problem	134
	Summary	134
6.1	Introduction	134
6.2	The symbol grounding problem	136
6.3	The representationalist approach	137
	6.3.1 A hybrid model for the solution of the SGP	138
	6.3.1.1 SGP and the symbolic theft hypothesis	142
	6.3.2 A functional model for the solution of the SGP	143
	6.3.3 An intentional model for the solution of the SGP	144
	6.3.3.1 Clarion	146
6.4	The semi-representationalist approach	149
	6.4.1 An epistemological model for the solution of the SGP	149
	6.4.2 The physical symbol grounding problem	150
	6.4.3 A model based on temporal delays and predictive semantics	4.50
· -	for the solution of the SGP	153
6.5	The non-representationalist approach	155
	6.5.1 A communication-based model for the solution of the SGP	156
	6.5.2 A behaviour-based model for the solution of the SGP 6.5.2.1 Emulative learning and the rejection of representations	157 159
	Conclusion	160

viii CONTENTS

Chapter 7—Action-based semantics	162
Summary	162
7.1 Introduction	162
7.2 Action-based Semantics	164
7.3 Two-machine artificial agents and their AbS	166
7.3.1 Three controversial aspects of AM ² 7.3.2 Learning and performing rule through Hebb's rule	172
and local selection	173
7.4 From grounded symbols to grounded communication and abst	
Conclusion	179
Chapter 8—Semantic information and the correctness theory of tru	182
Summary	182
8.1 Introduction	183
8.2 First step: Translation	186
8.3 Second step: Polarization	188
8.4 Third step: Normalization	190
8.5 Fourth step: Verification and validation	193
8.6 Fifth step: Correctness	195
8.7 Some implications and advantages of the correctness theory of	truth 199
8.7.1 Truthmakers and coherentism	199
8.7.2 Accessibility, bidimensionalism, and correspondentism	201
8.7.3 Types of semantic information and the variety of truths	203
8.7.4 A deflationist interpretation of falsehood as failure	205
8.7.5 The information-inaptness of semantic paradoxes	205
Conclusion	208
Chapter 9—The logical unsolvability of the Gettier problem	209
Summary	209
9.1 Introduction	210
9.2 Why the Gettier problem is unsolvable in principle	212
9.3 Three objections and replies	217
Conclusion	222
Chapter 10—The logic of being informed	224
Summary	224
10.1 Introduction	224
10.2 Three logics of information	226
10.3 Modelling 'being informed'	228
10.3.1 IL satisfies A_1 , A_2 , A_3 , A_5	229
10.3.2 Consistency and truth: IL satisfies A_9 and A_4	230
10.3.3 No reflectivity: IL does not satisfy A_6 , A_8	232

	10.3.4 Transmissibility: IL satisfies A ₁₀ and A ₁₁	236
	10.3.5 Constructing the Information Base: IL satisfies A ₇	236
	10.3.6 KTB-IL	237
10.4	Four epistemological implications of KTB-IL	238
	10.4.1 Information overload in KTB-IL	238
	10.4.2 In favour of the veridicality thesis	239
	10.4.3 The relations between DL, IL and EL	240
	10.4.4 Against the untouchable	241
	Conclusion	243
Chap	oter 11—Understanding epistemic relevance	244
	Summary	244
11.	1 Introduction	245
11.2	2 Epistemic vs causal relevance	246
11.3	The basic case	249
	11.3.1 Advantages of the basic case	249
	11.3.2 Limits of the basic case	251
11.4	4 A probabilistic revision of the basic case	251
	11.4.1 Advantages of the probabilistic revision	252
	11.4.2 Limits of the probabilistic revision	252
11.5	5 A counterfactual revision of the probabilistic analysis	253
	11.5.1 Advantages of the counterfactual revision	253
4.4	11.5.2 Limits of the counterfactual revision	253
	6 A metatheoretical revision of the counterfactual analysis	254
	7 Advantages of the metatheoretical revision	256
	8 Some illustrative cases	257
	Misinformation cannot be relevant	260
11.10	Two objections and replies	261
	11.10.1 Completeness: No relevant semantic information for	
	semantically unable agents	261
	11.10.2 Soundness: Rationality does not presuppose relevance	262
	Conclusion	265
Chap	oter 12—Semantic information and the network theory of account	267
	Summary	267
12.1	Introduction	268
12.2	The nature of the upgrading problem: Mutual independence	268
12.3	Solving the upgrading problem: The network theory of account	274
12.4	Advantages of a network theory of account	279
	Testing the network theory of account	284
	Conclusion	288

X CONTENTS

Cha	pter 13—Consciousness, agents, and the knowledge game	29
	Summary	290
13.1	Introduction	290
13.2	The knowledge game	290
13.3	The first and classic version of the knowledge game: Externally	
	inferable states	29
	13.3.1 Synchronic inferences: A fairer version of the knowledge game	298
	13.3.2 Winners of the classic version	300
	The second version of the knowledge game	30
	The third version of the knowledge game	302
	The fourth version of the knowledge game	307
13.7	Dretske's question and the knowledge game	309
	Conclusion	313
Char	oter 14—Against digital ontology	316
Chap	Summary	316
14 1	Introduction	316
	What is digital ontology? It from Bit	317
1 1.2	14.2.1 Digital ontology: From physical to metaphysical problems	320
14.3	The thought experiment	325
1 1.0	14.3.1 Stage 1: Reality in itself is digital or analogue	327
	14.3.2 Stage 2: The stubborn legacy of the analogue	329
	14.3.3 Stage 3: The observer's analysis	33(
	14.3.4 Digital and analogue are features of the level of abstraction	332
14.4	Three objections and replies	334
	Conclusion	337
Char	pter 15—A defence of informational structural realism	339
Cita	Summary	339
15.1	Introduction	340
	First step: ESR and OSR are not incompatible	344
10.2	15.2.1 Indirect knowledge	345
	15.2.2 Structuralism and the levels of abstraction	347
	15.2.3 Ontological commitments and levels of abstractions	348
	15.2.4 How to reconcile ESR and OSR	349
15.3	Second step: Relata are not logically prior to all relations	353
15.4	Third step: The concept of a structural object is not empty	355
15.5	Informational structural realism	360
15.6	Ten objections and replies	361
	Conclusion	369
D of		372
<i>Kejer Index</i>	References	
THUCK	·	401