Contents

Introduction to the Series	xi
Foreword	xiii
Introduction	xix
List of Contributors	xxxi
APPROACHES TO UNIFICATION	
A A Marian Follows	
1 A Note on Evolution Ervin Laszlo	1
LIVIN LASZIV	,
2 Is a Unified Theory of Information Feasible? A Trialogue	
Rafael Capurro, Peter Fleissner, and Wolfgang Hofkirchner	9
3 Information: Resurrection of the Cartesian Physics Koichiro Matsuno	31
4 Information Science as a Paradigmatic Instance of a Problem-Based Theory	
Antonino Drago and Emanuele Drago	45
5 A Rudimentary Theory of Information: Consequences for Information Science	
and Information Systems	
Petros A. M. Gelepithis	67
6 What Is a Possible Ontological and Epistemological Framework for a True Universal 'Information	
Science'? The Suggestion of a Cybersemiotics Søren Brier	79
7 Towards a Unified Concept of Information: Presentation of a New Approach	
Federico Flückiger	101

241

CONCEPTS OF INFORMATION

8	System as Information—Information as System Klaus Kornwachs	113
9	Cartesian Cut, Heisenberg Cut, and the Concept of Complexity	
	Harald Atmanspacher	125
10	Information: Definition, Origin and Evolution Jiayin Min	149
11	A Unifying Typology of Information	
	Béla Antal Banathy	159
12	Dimensional Symmetry Breaking, Information and the Arrow of Time in Cantorian Space	
	Muhammad S. El Naschie	179
13	Some Considerations About Interaction and Exchange of Information Between Open and Self-Organizing Systems	
	Norbert Fenzl	189
14	Actio non est Reactio: An Extension of the Concept of Causality Towards	
	Phenomena of Information	dark .
	Peter Fleissner and Wolfgang Hofkirchner	197
15	On Limits: Towards a Prototheory of Inform(ul)ation Josef Wallmannsberger	215
SEL	F-ORGANIZING SYSTEMS	
16	The Rise of Information in an Evolutionary Universe	
	Eric J. Chaisson	231
17	The Overall Pattern of the Evolution	

of Information in Dissipative, Material Systems

Stanley N. Salthe

СО	NTENTS	vi
18	Entropy, Information and Predictability of Evolutionary Systems Werner Ebeling	251
19	Entropy and Information	
15	Katalin Martinás	265
20	Degeneracy of the Local Structure Renormalizing Infinite Time and Space Yukio-Pegio Gunji	277
	Tukio-regio Gunji	277
21	Quantum Information in an Evolutionary Perspective Gerhard Grössing	293
22	Information and the Complementarity Game Karl Svozil	305
23	Structural and Functional Information— An Evolutionary Approach to Pragmatic Information Frank Schweitzer	315
LIF	E AND CONSCIOUSNESS	
24	Information—Neither Matter nor Mind: On the Essence and on the Evolutionary Stage Conception of Information Klaus Fuchs-Kittowski	331
25	Information Processing as an Intrinsic Property of Biological Systems: Origin and Dynamics of Information Abir U. Igamberdiev	351
26	Cell Molecular Quantum Computer	
20	and Principles of New Science Efim A. Liberman and Svetlana V. Minina	363
27	The Natural History of Information Processors Claudio Zamitti Mammana	371

CO	NTENTS	vii
18	Entropy, Information and Predictability of Evolutionary Systems Werner Ebeling	251
19	Entropy and Information Katalin Martinás	265
20	Degeneracy of the Local Structure Renormalizing Infinite Time and Space	
	Yukio-Pegio Gunji	277
21	Quantum Information in an Evolutionary Perspective Gerhard Grössing	293
22	Information and the Complementarity Game Karl Svozil	305
23	Structural and Functional Information— An Evolutionary Approach to Pragmatic Information Frank Schweitzer	315
LIF	E AND CONSCIOUSNESS	
24	Information—Neither Matter nor Mind: On the Essence and on the Evolutionary Stage Conception of Information Klaus Fuchs-Kittowski	331
25	Information Processing as an Intrinsic Property of Biological Systems: Origin and Dynamics of Information Abir U. Igamberdiev	351
26	Cell Molecular Quantum Computer	
20	and Principles of New Science Efim A. Liberman and Svetlana V. Minina	363
27	The Natural History of Information Processors	
	Claudio Zamitti Mammana	371

viii CONTENTS

28	The Evolution of Consciousness as a Self-Organizing Information System in the Society of Other Such Systems		207
	Allan Combs and Sally Goerner		387
29	The Topological Inventions of Life: From the Specialization of Multicellular Colonies to the Functioning of the Vertebrate Brain Pedro C. Marijuán		395
30	The Feigenbaum Scenario in a Unified Science of Life and Mind Ernest Lawrence Rossi		411
	Linest Exterence 10331		711
31	The Demotion of Alpha-Homo sapiens: Consciousness, Punctuated Equilibrium, and the Laws of the Game		
	William S. Dockens III		425
SO	CIETY AND TECHNOLOGY		
32	Organisms, Machines, and Societies: From the Vertical Structure of Adaptability to the Management of Information		
	Michael Conrad		443
33	Function Support as an Information Systems Development Paradigm		
	Roberto R. Kampfner		463
34	Interaction, Information and Meaning Robert Artigiani		477
35	The Structure of "Communities"		
	and Communications in the New Millennium Susantha Goonatilake		489
36	The Role of Variety in the Evolution		
	of Information Society		100
	Gottfried Stockinger		499

CONTENTS		ix
37	Knowledge in the Information Society Nina Degele	513
38	The Noosphere Vision of Pierre Teilhard de Chardin and Vladimir I. Vernadsky in the Perspective of Information and of Worldwide Communication	
	Klaus Fuchs-Kittowski and Peter Krüger	525
39	Webometry: Measuring the Complexity of the World Wide Web Ralph H. Abraham	553
40	The Emerging Global Brain Tom Stonier	561
Ind	ex of Names	581
Subject Index		588