TABLE OF CONTENTS

	ON THE BOOK SERIES	6
	INTRODUCTION — CODING AS LITERACY	12
	WHAT MAKES THE SELF-ORGANIZING MAPS (SOM) SO PARTICULAR AMONG LEARNING ALGORITHMS? — TEUVO KOHONEN	22
I	ELEMENTS OF A DIGITAL ARCHITECTURE LUDGER HOVESTADT I TIMAEUS 36 — II PYTHAGORAS 45 — III PTOLEMY 58 — IV ALBERTI 69 — V LAGRANGE 82 — VI MARKOV 97	28
П	A NONANTHROPOCENTRIC APPROACH TO APPERCEPTION SHA XIN WEI JEAN PETITOT'S FIBER-BUNDLE APPROACH TO APPERCEPTION 119— THE CASE FOR CONTINUA 127	116
ш	PRE-SPECIFIC MODELING: COMPUTATIONAL MACHINES IN A COEXISTENCE WITH CONCRETE UNIVERSALS AND DATA STREAMS — VAHID MOOSAVI I HOW TO APPROACH THE NOTION OF SCIENTIFIC MODELING 134 — II FORMAL DEFINITIONS AND CATEGORIES OF SCIENTIFIC MODELING 136 — III IDEALIZATIONIN SCIENTIFIC MODELING 137 — IV UNIVERSALS AND MODELING 141 — V SPECIFIC MODELING: MODELS BASED ON ABSTRACT UNIVERSALS 146 · V.I.I IGODEL'S INCOMPLETENESS THEOREM AND ARBITRARINESS OF MODELS BASED ON ABSTRACT UNIVERSALS 146 · V.I.II CURSE OF DIMENSIONALITY IN COMPLEX SYSTEMS 147 · V.I.III FROM PARTICULAR TO GENERICAND THE CONCEPT OF "ERROR" 147 — VI PRE-SPECIFIC MODELING: MODELS BASED ON CONCEPT OF "ERROR" 148 · VI. DEDEKIND CUT: WHEN A PARTICULAR OBJECT IS REPRESENTED BY THE NEGATION OF ITS COMPLEMENT 149 · V.I.II FROM GENERIC TO PARTICULAR: OBJECT-DEPENDENT REPRESENTATION 150 — VII MASSIVE UNSTRUCTURED DATA STREAMS: AN INVERSION IN THE NOTION OF MEASUREMENTS AND DATA PROCESSING 152 — VIII COMPUTATIONAL METHODS SUPPORTING PRE-SPECIFIC MODELING 156 · VIII.I MARKOV CHAINS 156 · VIII.II SELF-ORGANIZING MAP 161 · VIII.II.I IN O MORE EXTERNAL DICTIONARY AND NO MORE GENERIC OBJECT 162 · VIII.III.I ICOMPUTING WITH INDEXES BEYOND IDEAL CURVES 165	132
IV	som. self. organized. — andré skupin	168
v	THE NATURE OF LOCAL/GLOBAL DISTINCTIONS, GROUP ACTIONS, AND PHASES: A SHEAF-THEORETIC APPROACH TO QUANTUM GEOMETRIC SPECTRA — ELIAS ZAFIRIS I OBSERVABLESAND GEOMETRIC SPECTRUM 174 — II GROUP ACTIONS AND THE ERLANGEN PROGRAM 175 — III LOCAL GROUP ACTIONS AND GAUGE THEORY 176 — IV THE ADVENT OF QUANTUM THEORY 178 — V WHAT IS A SHEAF? 180 — VI THE PROGRAM OF "RELATIONAL REALISM" 181 — VII QUANTUM MECHANICS AS A NON-SPATIOTEMPORAL GAUGE THEORY 183 — VIII QUANTUM GEOMETRIC SPECTRA 185	172

LF-ORGANIZING MAPS AND LEARNING VECTOR	188
JANTIZATION FOR COMPLEX DATA—BARBARA HAMMER	
NTRODUCTION 191 — II FUNDAMENTAL PRINCIPLES 194 · II.I UNSUPER-	
SED PROTOTYPE-BASED TECHNIQUES 194 · II.II SUPERVISED PROTOTYPE-	

I INTRODUCTION 191 — II FUNDAMENTAL PRINCIPLES 194 · II.I UNSUPERVISED PROTOTYPE-BASED TECHNIQUES 194 · II.II SUPERVISED PROTOTYPE-BASED SCHEMES 197 — III METRIC LEARNING 199 — IV RELATIONAL AND KERNEL MAPPING 202 — V RECURSIVE MODELS 208 — VI CONCLUSIONS 21I — ACKNOWLEDGMENTS 21I

VI SE QU

VII THE COMMON SENSE OF QUANTUM THEORY: EXPLORING THE INTERNAL RELATIONAL STRUCTURE OF SELF-ORGANIZATION IN NATURE — MICHAEL EPPERSON

VIII GICA: GROUNDED INTERSUBJECTIVE CONCEPT ANALYSIS.
A METHOD FOR IMPROVED RESEARCH, COMMUNICATION,
AND PARTICIPATION — TIMO HONKELA ET. AL

I INTRODUCTION 239 · I.I CONTEXTUALITY AND SUBJECTIVITY 240 · I.II SHEDDING LIGHT ON SUBJECTIVITY: CROWDSOURCING 242 · I.III BECOM-ING CONSCIOUS OF INDIVIDUAL DIFFERENCES AS A WAY OF INCREASING UNDERSTANDING 243 · I.IV FALSE AGREEMENTS AND FALSE DISAGREEMENTS 244 · I.V MAKING DIFFERENCES IN UNDERSTANDING VISIBLE 244 — II THEORETICAL BACKGROUND 245 · II.I COGNITIVE THEORY OF CONCEPTS AND UNDERSTANDING 245 · II.II SUBJECTIVE CONCEPTUAL SPACES 249 · II.III INTERSUBJECTIVITY IN CONCEPTUAL SPACES 250 · II.IV CONCEPTUAL DIFFERENCES IN COLLABORATIVE PROBLEM SOLVING 250 - III THE GICA METHOD 252 · III.I INTRODUCTION TO SUBJECTIVITY AND CONTEXT ANALYSIS 254 · III.II PREPARATION AND SPECIFYING THE TOPIC 257 · III.II.I DETERMI-NING RELEVANT STAKEHOLDER GROUPS 257 · III.II.II COLLECTING FOCUS ITEMS FROM RELEVANT STAKEHOLDERS AND OTHERS 257 · III.II.III COLLECT-ING CONTEXT ITEMS 258 · III.III FOCUS SESSION 259 · III.III.I FILLING IN THE TENSOR 259 · III.III.II DATA ANALYSIS AND VISUALIZATION 260 · III.IV KNOWLEDGE TO ACTION 264 — IV DISCUSSION 265 · IV.I GICA AS A PARTICI-PATORY METHOD 266 · IV.I.I FOCUSING ON SUBJECTIVE DIFFERENCES 268 · IV.I.II BARRIERS FOR SUCCESSFUL COMMUNICATION IN PARTICIPATORY PROCESSES 269 · IV.II SUMMARIZING OUR CONTRIBUTION AND FUTURE DIREC-TIONS 270 — V ACKNOWLEDGMENTS 272 — VI FURTHER REFERENCES 273

IX "ICHNOGRAPHY"—THE NUDE AND ITS MODEL THE ALPHABETIC ABSOLUTE AND STORYTELLING IN THE GRAMMATICAL CASE OF THE CRYPTOGRAPHIC LOCATIVE VERA BÜHLMANN

I THEME ONE, PLOT ONE: HUMANISM 280 · BLESSED CURIOSITY 280 · THE ALPHABETIC ABSOLUTE 285 · THE COMIC 287 · MEDIACY AND REAL TIME 291 · HOW TO ADDRESS THE TENSE-NESS OF RADIOACTIVE MATTER IN A UNIVERSE'S INSTANTANEITY? 296 · THE UNKNOWN MASTERPIECE: THE DEPICTION OF NOTHING-AT-ALL 303 · THE SIGNATURE OF THE UNKNOWN MASTERPIECE 317 - II THEME ONE, PLOT TWO: THE SUMMATION OF INFINITE TERMS IN SERIES 323 · SCIENCE, LIBERALIZATION, AND THE ABSOLUTE 323 · TWO KINDS OF MATHESIS: GENERAL AND UNIVERSAL 326 · CARTESIAN LIMITS 328 · ALGEBRA IN THE SERVICE OF PARABOLIC IN-VENTION 331 — III THEME ONE, PLOT THREE: NAMING THAT OF WHICH WE KNOW NOTHING 334 · WE ARE LEIBNIZ'S CONTEMPORARIES 334 · ALGEBRA'S SCOPE OF INFINITARY DISCRETION 335. "NATURE IS THERE ONLY ONCE": THE PROMISE OF A GENERAL METRICS 338 · SYMBOLISMS AND MODES OF DETERMINATION 340 · PSYCHO-POLITICAL STRUGGLE AROUND THE CARDINALITY AND ORDINALITY OF SUMS (TOTALS) 342 · THE PRE-SUMPTUOUSNESS OF UNIVERSAL MEASURE 345 · DISCRETE INTELLECTION OF INVARIANCES VS. MEASURING THE CONTINUITY OWED TO CONSTANT VALUES 346

IMAGE REFERENCES

351

COLOPHON

352

276

214