

## CONTENTS

|  |      |
|--|------|
| Dedication   | v    |
| Preface  | vii  |
| Program Committee  | xiii |
| Contributing Authors   | xv   |
| Contents   | xvii |
| <b>Opening Lecture</b>   |      |
| Coherence, Complexity and Creativity<br><i>Fortunato Tito Arcelli</i>  | 3    |
| <b>Emergence in Architecture</b>   |      |
| Environment and Architecture – A Paradigm Shift<br><i>Valerio Di Battista</i>  | 37   |
| Emergence of Architectural Phenomena in the Human Habitation of Space<br><i>Arne Collen</i>  | 51   |
| Questions of Method on Interoperability in Architecture<br><i>Ezio Arlati, Giorgio Giallocosta</i>   | 67   |
| Comprehensive Plans for a Culture-Driven Local Development:<br>Emergence as a Tool for Understanding Social Impacts of Projects<br>on Built Cultural Heritage<br><i>Stefano Della Torre, Andrea Canziani</i> | 79   |
| Systemic and Architecture: Current Theoretical Issues<br><i>Giorgio Giallocosta</i>  | 91   |

## Processes of Emergence in Economics and Management

|  |     |
|--|-----|
| Modeling the 360° Innovating Firm as a Multiple System<br>or Collective Being  | 103 |
| <i>Véronique Bouchard</i>  |     |
| The COD Model: Simulating Workgroup Performance  | 113 |
| <i>Lucio Biggiero, Enrico Sevi</i>   |     |
| Importance of the Infradisciplinary Areas in the Systemic Approach<br>Towards New Company Organisational Models: the Building Industry | 135 |
| <i>Giorgio Giallocosta</i>   |     |
| Systemic Openness of the Economy and Normative Analysis  | 149 |
| <i>Paolo Ramazzotti</i>  |     |
| Motivational Antecedents of Individual Innovation  | 163 |
| <i>Patrizia Picci, Adalgisa Battistelli</i>  |     |
| An E-Usability View of the Web: A Systemic Method for User Interfaces  | 181 |
| <i>Vera Stara, Maria Pietronilla Penna, Guido Tascini</i>  |     |
| <b>Emergence</b>   |     |
| Evolutionary Computation and Emergent Modeling of Natural Phenomena  | 195 |
| <i>R. Rongo, W. Spataro, D. D'Ambrosio, M.V. Avolio,<br/>V. Lupiano, S. Di Gregorio</i>  |     |
| A New Model for the Organizational Knowledge Life Cycle  | 215 |
| <i>Luigi Lella, Ignazio Licata</i>   |     |
| On Generalization: Constructing a General Concept<br>from a Single Example   | 229 |
| <i>Shelia Guberman</i>   |     |
| General Theory of Emergence Beyond Systemic Generalization   | 241 |
| <i>Gianfranco Minati</i>   |     |
| Uncertainty, Coherence, Emergence  | 257 |
| <i>Giordano Bruno</i>  |     |
| Emergence and Gravitational Conjectures  | 265 |
| <i>Paolo Allievi, Alberto Trotta</i>   |     |

**Emergence in Social Systems**

|   |     |
|---|-----|
| Inducing Systems Thinking in Consumer Societies<br><i>Gianfranco Minati, Larry A. Magliocca</i> | 283 |
|---|-----|

|   |     |
|---|-----|
| Contextual Analysis. A Multiperspective Inquiry into Emergence<br>of Complex Socio-Cultural Systems<br><i>Peter M. Bednar</i> | 299 |
|---|-----|

|   |     |
|---|-----|
| Job Satisfaction and Organizational Commitment:<br>Affective Commitment Predictors in a Group of Professionals<br><i>Maria Santa Ferretti</i> | 313 |
|---|-----|

|   |     |
|---|-----|
| Organizational Climate Assessment: A Systemic Perspective<br><i>Piergiorgio Argentero, Ilaria Setti</i> | 331 |
|---|-----|

|   |     |
|---|-----|
| Environment and Urban Tourism: An Emergent System<br>in Rhetorical Place Identity Definitions<br><i>Marina Mura</i> | 347 |
|---|-----|

**Emergence in Artificial Intelligence**

|  |     |
|--|-----|
| Different Approaches to Semantics in Knowledge Representation<br><i>S. David, A. Montesanto, C. Rocchi</i> | 365 |
|--|-----|

|   |     |
|---|-----|
| Bidimensional Turing Machines as Galilean Models<br>of Human Computation<br><i>Marco Giunti</i> | 383 |
|---|-----|

|   |     |
|---|-----|
| A Neural Model of Face Recognition: A Comprehensive Approach<br><i>Vera Stara, Anna Montesanto, Paolo Puliti,<br/>Guido Tascini, Cristina Sechi</i> | 407 |
|---|-----|

|  |     |
|--|-----|
| Anticipatory Cognitive Systems: A Theoretical Model<br><i>Graziano Terenzi</i> | 425 |
|--|-----|

|  |     |
|--|-----|
| Decision Making Models within Incomplete Information Games<br><i>Natale Bonfiglio, Simone Percivalle, Eliano Pessa</i> | 441 |
|--|-----|

**Emergence in Medicine**

|  |     |
|--|-----|
| Burnout and Job Engagement in Emergency and Intensive Care Nurses<br><i>Piergiorgio Argentero, Bianca Dell'olivo</i> | 455 |
|--|-----|

|  |     |
|--|-----|
| The “Implicit” Ethics of a Systemic Approach to the Medical Praxis<br><i>Alberto Ricciuti</i>  | 473 |
| Post Traumatic Stress Disorder in Emergency Workers:<br>Risk Factors and Treatment<br><i>Piergiorgio Argentero, Bianca Dell’Olivo, Ilaria Setti</i>                                      | 487 |
| State Variability and Psychopathological Attractors.<br>The Behavioural Complexity as Discriminating Factor between<br>the Pathology and Normality Profiles<br><i>Pier Luigi Marconi</i> | 503 |
| <b>Models and Systems</b>  |     |
| Decomposition of Systems and Complexity<br><i>Mario R. Abram</i>   | 533 |
| How many Stars are there in Heaven ? The results of a study<br>of Universe in the light of Stability Theory<br><i>Umberto Di Caprio</i>  | 545 |
| Description of a Complex System through Recursive Functions<br><i>Guido Massa Finoli</i>   | 561 |
| Issues on Critical Infrastructures<br><i>Mario R. Abram, Marino Sforza</i>   | 571 |
| <b>Theoretical Problems of Systemics</b>   |     |
| Downward Causation and Relatedness in Emergent Systems:<br>Epistemological Remarks<br><i>Leonardo Bich</i>   | 591 |
| Towards a General Theory of Change<br><i>Eliano Pessa</i>  | 603 |
| Acquired Emergent Properties<br><i>Gianfranco Minati</i>   | 625 |
| The Growth of Populations of Protocells<br><i>Roberto Serra, Timoteo Carletti, Irene Poli, Alessandro Filisetti</i>  | 641 |
| Investigating Cell Criticality<br><i>R. Serra, M. Villani, C. Damiani, A. Graudenzi,<br/>P. Ingrams, A. Colacci</i>  | 649 |

|   |     |
|---|-----|
| Relativistic Stability. Part 1 - Relation Between Special Relativity and Stability Theory in the Two-Body Problem<br><i>Umberto Di Caprio</i>               | 659 |
| Relativistic Stability. Part 2 - A Study of Black-Holes and of the Schwarzschild Radius<br><i>Umberto Di Caprio</i>   | 673 |
| The Formation of Coherent Domains in the Process of Symmetry Breaking Phase Transitions<br><i>Emilio Del Giudice, Giuseppe Vitiello</i>                     | 685 |
| <b>Cognitive Science</b>  |     |
| Organizations as Cognitive Systems.<br>Is Knowledge an Emergent Property of Information Networks?<br><i>Lucio Biggiero</i>                                  | 697 |
| Communication, Silence and Miscommunication<br><i>Maria Pietronilla Penna, Sandro Mocci, Cristina Sechi</i>   | 713 |
| Music: Creativity and Structure Transitions<br><i>Emanuela Pietrocini</i>   | 723 |
| The Emergence of Figural Effects in the Watercolor Illusion<br><i>Baingio Pinna, Maria Pietronilla Penna</i>  | 745 |
| Continuities and Discontinuities in Motion Perception<br><i>Baingio Pinna, Richard L. Gregory</i>   | 765 |
| Mother and Infant Talk about Mental States: Systemic Emergence of Psychological Lexicon and Theory of Mind Understanding<br><i>D. Rollo, F. Buttiglieri</i> | 777 |
| Conflict in Relationships and Perceived Support in Innovative Work Behavior<br><i>Adalgisa Battistelli, Patrizia Picci, Carlo Odoardi</i>                   | 787 |
| Role Variables vs. Contextual Variables in the Theory of Didactic Systems<br><i>Monica Alberti, Lucia Cirina, Francesco Paoli</i>                           | 803 |