

Computational Psychology – Future Behavioral Science

Copyright: Teemu Leppänen (www.iki.fi/tileppan), 2004

Contents

1. Introduction
2. Historical Roots of Theoretical Psychology
 - 2.1 Quantum Mechanics and Metaphysics
 - 2.2 Topological Psychology and Field Theory
 - 2.3 Stochastic Theory of Social Interaction
 - 2.4 Sociophysics
3. Methodological Framework for Computational Psychology
 - 3.1 Caterpillar Paradigm of Behavioral Science
 - 3.2 Group Theory in the Lewinian Life Space
 - 3.3 Cognitive Maps, Sociograms and Complex Networks
 - 3.4 Potences by Bayesian Probability Theory
 - 3.5 Stochastic Processes of Cognition Dynamics
 - 3.6 Differential Equations for Collective Phenomena
 - 3.7 Computational Methods
 - 3.8 Note on Determinism and Causality
4. On Computability of Selected Psychological Theories
 - 4.1 Lewin's Field Theory
 - 4.2 Heider's Balance Theory
 - 4.3 Festinger's Theory of Cognitive Dissonance
 - 4.4 Kelley's Covariation Theory
 - 4.5 Turner's Self-Categorization Theory
 - 4.6 Behavioral Learning Theory
 - 4.7 Synthesis of Theories
5. Applications of Computational Psychology
 - 5.1 Models of Individual Phenomena
 - 5.1.1 Problem-Solving
 - 5.1.2 Decision-Making
 - 5.1.3 Prejudice and Stereotyping
 - 5.1.4 Attributions
 - 5.1.5 Person and Situation
 - 5.2 Models of Group Phenomena
 - 5.2.1 Problem-Solving
 - 5.2.2 Conformity
 - 5.2.3 Group Polarization
 - 5.2.4 Minority Influence
 - 5.2.5 Social Diffusion
 - 5.3 Notes on Nature and Validity of Mathematical Models
6. Computational Psychology as a Science
 - 6.1 Epistemology and Goals of Computational Psychology
 - 6.2 Advantages of Employing Computational Approach in Psychology
 - 6.3 Critical Evaluation and Some Remarks
7. Discussion