

CONTENTS

| | |
|---|------------|
| Preface by Peter Weibel | 010 |
| Institute | 013 |
| The ZKM Institute for Basic Research | 014 |
| Staff | 016 |
| Theory | 019 |
| Chapter I: Performative Science | 020 |
| 1. Introduction | 020 |
| 2. Performance and Performativity | 021 |
| 3. Characteristics | 021 |
| 4. Performance as a Tool | 022 |
| 5. The Turners | 022 |
| 6. Albert Köster | 024 |
| 7. Advantages of Performances | 025 |
| 7.1 Imagination | 025 |
| 7.2 Better Understanding | 025 |
| 7.3 Critique and Heuristics | 025 |
| 8. Endo-Chaos | 026 |
| 9. Pattern Formation: Liquid Perceptron | 030 |
| 10. Pattern Formation: μ -Neuron | 032 |
| 11. Sonification of Brain Activity | 035 |
| 12. Conclusions | 035 |

Chapter II: Cognitive Modelling & Molecular Dynamics

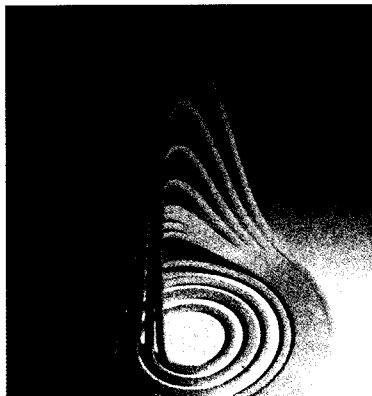
| | |
|---|-----|
| 13. Introduction | 036 |
| 14. Dynamic Adaptation | 037 |
| 15. Synchronization | 038 |
| 16. Functionality of the Adaptive System | 038 |
| 17. Towards Realistic Applications | 040 |
| 18. Adaptation to Spatio-Temporal-Patterns | 042 |
| 19. Physics of Observation | 043 |
| 20. Flow of Information and Entropy | 046 |
| 21. Fundamental Interfaciology: Indistinguishability and Time's Arrow | 048 |
| 21.1 Classical Indistinguishability | 048 |
| 21.2. Molecular Dynamics Simulations | 049 |
| 21.3 Reversible Molecular Dynamics Simulations | 050 |
| 21.4 Reversible Computation | 051 |
| 21.5 Molecular Dynamics of Complex Systems | 051 |
| 21.6 Dissipative Structures in Reversible Molecular Dynamics | 053 |
| 21.7 Reversible Computation and Molecular Dynamics | 053 |
| 21.8 Indistinguishability, Categorization, and Process | 054 |
| 21.9 The "Now" as an Interface | 056 |
| 21.10 Experience of Time | 057 |
| 22. Conclusions | 058 |

Chapter III: Operational Hermeneutics

| | |
|--|-----|
| 23. Introduction | 060 |
| 24. Dynamic Neural Activity, Chaotic Itinerancy, and Hermeneutics of the Brain | 061 |
| 24.1 Dynamic Memory | 061 |
| 24.2 Chaotic Itinerancy | 062 |
| 24.3 Hermeneutics of the Brain | 062 |
| 25. Artificial Intelligence | 063 |
| 26. Eye-Vision-Bot | 065 |
| 27. KI Arena | 068 |

| | |
|---|------------|
| 28. Art or Science? | 070 |
| 29. Conclusions | 073 |
| References | 076 |
| | |
| Projects | 085 |
| | |
| Old and New in Reversible Universes, 2000 | 086 |
| Chaotic Itinerancy, 2000 | 088 |
| Micro Relativity, 2000 | 090 |
| Quantum Mirror, 2005 | 092 |
| Liquid Perceptron, 2000 | 094 |
| Liquid Perceptron 3D, 2003 | 106 |
| Lacanian Bottle, 2001 | 110 |
| c-Variations, 2002 | 112 |
| Algorithmic Echolocation, 2003 | 114 |
| ANTARKTIKA_1, 2005 | 120 |
| SOL, 2004 | 122 |
| INTERMITTENT, 2005 | 128 |
| Nonlinear Forms, 2004-2005 | 132 |
| Eye-Vision-Bot, 2003-2005 | 134 |
| KI Arena, 2004-2005 | 142 |
| Biofeedback and Choreography, 2005 | 146 |
| Cognition in Sport, 2004-2005 | 148 |
| Ways of Neuron, 2004-2005 | 150 |
| Philosophy and Natural Sciences, 2002-2003 | 152 |
| Art & Science @ MARCEL, 2004-2005 | 154 |

| | |
|---|------------|
| Events | 157 |
| Events at the ZKM and HfG | 158 |
| Presentations | 170 |
| The Institute's 3 rd Anniversary - July 11, 2002 | 170 |
| 289 th Birthday of Karlsruhe - June 18-20, 2004 | 172 |
| External Events and Lectures | 174 |
| Scientific Cooperations | 184 |
| Award | 190 |
| | |
| Publications | 193 |
| List of Publications | 194 |
| Books | 194 |
| Peer Reviewed Articles | 197 |
| Essays | 203 |
| Booklets | 209 |
| Videos | 211 |
| Acknowledgement | 213 |



• The Rössler attractor made palpable via rapid prototyping by Florian Grond.