

Disequilibrium and Self-Organisation

edited by

C. W. Kilmister

*Former Professor of Mathematics, King's College,
University of London, England*

UNIVERSITÄTSBIBLIOTHEK
HANNOVER
TECHNISCHE
INFORMATIONSBIBLIOTHEK

D. Reidel Publishing Company

A MEMBER OF THE KLUWER ACADEMIC PUBLISHERS GROUP



Dordrecht / Boston / Lancaster / Tokyo

TABLE OF CONTENTS

Series Editor's Preface	vii
Preface	ix
Self-Organization and Information Theory K.-E. Eriksson	1
The Mathematics Needed for Self-Organisation C. W. Kilmister	11
Entropy and Order P. T. Landsberg	19
Pattern Formation for a One Dimensional Evolution Equation Based on Thom's River Basin Model M. Hazewinkel, J. F. Kaashoek and B. Leynse	23
On the Modelling of Vehicular Traffic Flow A. E. Beylich	47
Alternative Exploitation of Dissipation Inequality Demonstrated for Hyperbolic Heat Conduction W. Muschik	65
A New Approach to Thermodynamics of Irreversible Processes by Means of Lagrange-Formalism K.-H. Anthony	75
A Boundary-Layer Theory for the Dynamics and Thermodynamics of Phase-Interfaces T. Alts	93
Large Scale Magnetic Fields in Fluids - An Example of a Dissipative Structure K. Bajer	129
Facing Some Problems with Entropy C. Blöss	141
On the Spontaneous Emission from Two-Level Atoms in a Damped Cavity J. Seke	155

Polynucleotides - A Class of Self-Organizing Biomolecules P. Schuster	165
Stages of Emerging Life - Five Principles of Early Organization M. Eigen and P. Schuster	169
The Physical Matrix for Self-Organisation R. K. Mishra	185
Spontaneously Broken Symmetries and Dissipative Structures E. Del Giudice, S. Doglia, M. Milani and G. Vitiello	197
On the Coherence of Ultraweak Photonemission from Living Tissues F.-A. Popp	207
Evolution: Natural Selection or Self-Organization? M. W. Ho and P. T. Saunders	231
Thermodynamics and Complex Systems P. T. Saunders and M. W. Ho	243
The Transition from Town to City: Metropolitan Behaviour in the 19th Century R. E. Zimmermann	255
Creation, Organisation and Preservation of Dissipative Structures S. Islam	285
Index	307