

Book Review

Self-Organisation of Complex Structures, Edited by Frank Schweitzer, published by Gordon and Breach, 1997, 596 pages, ISBN 9056990276, \$180.00.

Over the past one or two decades dealing with complex systems in a variety of disciplines has become a main topic of research.

These systems are composed of many subsystems interacting in a non-linear way with each other. On the macro-level self-organisation may lead to completely new features emerging by phase transitions if some parameters, called order parameters, pass critical values. Near the phase transition point fluctuations become important and enable the system to switch into the new phase. This is a short description of the unifying principles behind the synergetic view of self-organisation in the sense of H. Haken as described in the foreword.

The book is viewing self-organisation processes of open and complex systems belonging to different disciplines. It is the outcome of a selection of papers which were presented at the International Conference “Self-Organisation of Complex Structures: From Individual to Collective Dynamics”, held in Berlin in 1995.

The main focus in this proceedings is the emergence of collective phenomena based on microscopic interactions of the different subsystems. The 47 articles are selected and ordered under five headings:

1. Evolution of Complexity (11 articles).
2. Evolutionary Optimisation (8 articles).
3. Biological and Ecological Dynamics (8 articles).
4. Dynamics of Socio-economic Processes (11 articles).
5. Urban Structure Formation and Transportation Dynamics (9 articles).

Because of the many articles presented in this book it is not appropriate to deal with the different articles in detail. However, the author provides a careful selection of extraordinary good papers with examples for the five parts. A pedagogical introduction into the different fields of application is also given. The mathematical formulas are very carefully edited. Many well selected figures with a rather good printing quality are used to illustrate the behaviour of the different models.

However, the meaning of complexity or of a complex system is sometimes not very clear. Most of the examples are dealing with systems consisting of many but identical subsystems. The system as such seems to be rather simple, but to find analytical solutions for example may be very complicated. In so far, book is dealing mostly with complicated systems than with complex systems.

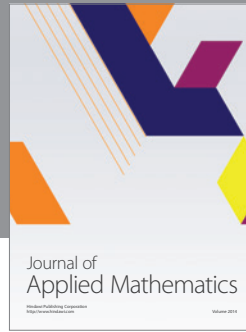
Because of the careful selection of papers and the comprehensive editing work this book is more than just a usual conference proceeding. For those in modelling and analysing complex systems this book offers an excellent framework that links different

disciplines and stresses the universality of the underlying mathematical structure. Moreover, the wide range of applications make it appealing to an international audience of interdisciplinary interested scientists.

It is not only a book presenting the state-of-art in the field of self-organisation for insiders but can be used by graduate students with a mathematical background in order to get an overview of this interesting field of research. I would like to

congratulate the editor Prof. Dr. Frank Schweitzer for the excellent work he has done.

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