

ERDELEN, WALTER R. and RICHARDSON, JACQUES G.: *Managing complexity: earth systems and strategies for the future*. 259 pp. Earthscan-Routledge. Abingdon and New York 2019. ISBN 978-0-367-00006-6 (hardback) \$US 140.00; 978-0-429-44505-7 (ebook) from \$27.48

An excellent book about complex systems, written by two “old hands” of UNESCO: Walter R. Erdelen (Assistant Director-General for Natural Sciences, 2001-2010) and Jacques G. Richardson (Head of the Science and Society Section, 1972-1985). Do not think of geology or just natural sciences while reading “earth systems”. This volume is about all sorts of complex systems on Earth, and the two authors really combine the natural and social sciences. The book is not easy to read, you really need to concentrate while reading. But then reading becomes a delight. Understanding complex systems you need more than a one-dimensional thinking as seems widespread among politicians. Time, the fourth dimension, becomes essential plus a view towards a worldwide web of complex systems, which are all somehow connected and interacting. A textbook for students of various faculties, managers, planners, decision makers, this book is a landmark like Dennis Meadows *Limits to Growth* or Fritjof Capra’s *Turning Point*.

Chapters:

- Introduction
- The Anthropocene and planetary boundaries: conditions of sustainable development
- Foresight and innovation: searching for the right future
- Education: towards universal understanding
- Science: the complexity of searching the truth
- Industry, engineering, further complexity: steam engines and more
- *Philosophia moralis*: systems stretched to the breaking point
- Water: simple matter of special complexity
- Biological diversity: bountiful Mother Nature
- Global climate change: humanity’s supreme challenge
- Diplomacy and foreign trade: weaving the web of international intercourse
- The military: risk management-plus, not perversity
- Migration: when exit becomes exodus
- Sustainable development: *Homo sapiens’* Holy Grail
- Risks, new departures, global solutions: challenges of a complex frontier

This is a book about the Anthropocene. The famous climatologist Paul Crutzen has coined the term, reflecting the steadily increasing human impacts on the complex systems of our planet which might finally lead to their collapse. The authors are not only looking at

earth systems like climate, water or biodiversity. Education, industry and economy, politics, the military and trade, elements of these earth systems and subject matters of the social sciences. Mass migration is a result of systems under stress. Sustainable development should be the overall goal; the authors refer to it as the *Holy Grail*.

This book is not a cook book for solutions, as you can read in the last chapter, but a shelf of cookbooks. These are the international meetings and their publications, most of them organized by the United Nations. The Rio Conference had been a landmark. The conferences on climate change and biological diversity had been part of the Rio process.

This book is not only on complex systems. It is very much complex in itself. And this is its amazing value: An attempt to draw a sketch of the highly interlinked earth systems of nature and man. You cannot read this book like a novel. But the delight is in the intelligent sketch of worldwide connections. Pigeonhole thinking is the direct opposite and contradiction of these chapters.

Is the human brain able to handle this? How many balls can we learn to juggle in order to understand the interlinked web of complex earth systems?

Reading this book is opening a scope. That’s why it is recommended to scientists of all disciplines and to decision makers.

A further edition of this book is highly recommended, and it should be translated into major languages. Illustrations, more reader-friendly boxes and a slightly larger type size would have made reading less tiring.

Managing Complexity reads as if written for geographers, members of an earth science discipline with many sub-disciplines. It is written for those willing to avoid pigeonhole thinking and trying to find solutions for humanity’s sustainable development on planet Earth.

WOLFGANG WERNER

SCHMITT, TOBIAS: *Dürre als gesellschaftliches Naturverhältnis – Die politische Ökologie des Wassers im Nordosten Brasiliens*. 437 S., 46 s/w Abb., 12 s/w Tab. Franz Steiner Verlag. Stuttgart 2017. ISBN: 978-3-515-11721-0. €66,00

Ins Besondere im Kontext des Klimawandels wird die Knappheit natürlicher Ressourcen zunehmend als Ursprung von Konflikten dargestellt. Schmitt nennt diese Argumentation „eine der größten Erzählungen des 21. Jahrhunderts“ (S.25), da die Reduzierung von Konflikten auf natürliche Gegebenheiten die Rolle von bestehenden Machtverhältnisse vernachlässigt. Er de-