

BOOK REVIEWS

Struggle of life or the natural history of stress and adaptation, by Martial Rossignol, Line Rossignol, Roelof A.A. Oldeman, and Soraya Bensine-Tizroutine. Treemail, The Netherlands, (1998), ISBN 90-804443-1-6, 237 pages, GBP 24.99.

The reviewed book is unique for two reasons. First, it was written by a multidisciplinary group of scientists that included an oceanographer, plant scientist, geneticist, and ecological forester. Second, it was not peer reviewed because the authors desired to avoid any implication that their views and approaches were limited by the 'party line'.

The book deals with all aspects of the 'struggle of life,' from the molecular, genetic, and cellular architecture of plants and plants under stress in ecosystems, all the way to energy flows and entropy and a perspective of the Earth and universe. The multiple disciplines represented by the authors help them to provide a broad perspective of plants and their struggle to persist in a variety of natural ecosystems.

The section of the book that deals with the molecular and genetic aspects of plants under stress is well-treated and carefully detailed in more than 50 pages. The authors discuss the cytogenetic processes implied in somatic meiosis and give details concerning the rules of cell and tissue behavior under stress. They also devote a great deal of discussion to DNA molecules and their roles in architecture and plant variation. This is one of the largest sections of the book, occupying approximately one-quarter of the volume.

Another substantially detailed treatment is given to the architecture of plants under stress, covered in about 60 pages. The authors discuss architectural dynamics in plant building and the rules of organ and whole plant behavior and structure under stress. Major attention is given to the struggle of life at the organism level. This discussion of plant architecture is unique in its analysis of plant morphology and growth structure when plants are under stress. The reviewer found this the most interesting chapter of the volume.

The authors carefully point out that all biological functions in a living system are carried out either by subsystems or at various levels that guarantee a minimal cost-benefit ratio in terms of matter, energy, and information in the system. They suggest that this rule can be applied to biological communities as well as living systems. They illustrate this by suggesting that a green plant is similar to a large firm and its small ancillary suppliers. The small suppliers for the green plant include various fungi, like mycorrhizae, and bacteria, such as nitrogen fixing microbes.

The overview of the struggle of life in the last chapter touches on all aspects of life systems, including solar energy, entropy, evolution, adaptation, the spread of AIDS, and other aspects of our global living system. The authors view the individual plant as a hierarchical system and they suggest a similar system exists with organisms in ecosystems. For example, they suggest that seed-dispersing and pollinating animals are common boosters in the spread and communication of information. Concerning the actions of dispersing organisms, the authors point out that rapid movement and contacts between American travelers and the inhabitants



of Africa and Asia triggered the spread of the HIV virus and AIDS throughout the world population.

The book is well written and is thoughtfully presented. I recommend it to all biologists with interests in plant sciences, ecology, morphology, genetics, biochemistry, evolution, adaptation, and especially plant architecture.

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Sustainable development – OECD policy approaches for the 21st century, OECD, 1997.
181 pages.

This publication is part history, part evaluation, and part forecast of policies and issues related to sustainability in the context of OECD's goals and objectives. The latter are simple, and stated at the beginning of the document: '... (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.'

However, there are many who would argue that those goals don't actually fit the concept of sustainable development. Whether or not you think those goals fit the concept of sustainability, this document is worth reading. It is unfortunate that no working OECD definition of sustainability or sustainable development is provided. This would be valuable so that readers could assess the ideas proposed in the various chapters. Agenda 21 is referred to generally several times as is the 1987 World Commission on Environment and Development report 'Our Common Future'. The reader must find appropriate definitions in these publications in order to fully understand the context of referrals made in this OECD report. However, this is not a severe handicap. The subjects covered and the discussions within are enlightening. Consider the structure of the document:

Part I – Cross-Sectoral Issues: Socio-Economic Dimensions

1. Integrating the Environment and the Economy
2. Shaping the 21st Century; the Contribution of Development Co-operation
3. Assessing Environmental Performance
4. Consumption and Production Patterns: Making the Change
5. Aid Agencies: Changing to Meet the Requirements of Rio
6. Trade and Environment in the OECD

Part II – Sectoral Issues

7. Energy Challenges and Opportunities for Action
8. Transport, Economic Development and Social Welfare
9. Sustainable Agriculture
10. Sound Management of Toxic Chemicals
11. Climate Change: Policy Options for OECD Countries
12. Nuclear Energy and Sustainability
13. Urbanisation and Sustainability
14. Biotechnology and Sustainable Development
15. Environmental Education and Sustainable Development: Trends in Member Countries

This subject list arguably covers most of the main global concerns related to sustainability. Albeit, there are some important social issues not covered. It seems the cause of this is OECD's focus on the environment and the economy. This is a theme that dominates the discussion. Still socio-economic issues are noted many times.

The discussions in each chapter do a fairly good job of noting problems with pursuing sustainable development ('SD') strategies. Overall there is a general theme of self-congratulations on OECD's 'successes'. There are also discussions of failings or needs. For example 'While the efficiency and effectiveness of economic instruments is proven by theory and confirmed by ex ante calculations, as mentioned above, little ex post evaluation of the actual achievements of economic instruments has been carried out.' The author is noting that evaluation of policies is almost non-existent and then goes further to say that more monitoring and better indicators are needed.

Each chapter gives a good overview of some of the OECD history of grappling with the topic issue, the current situation, and discussion of future action. There are many laudable goals that have been set by the OECD, and these are set forth in each chapter. There is also honest discussion of the lack of progress towards these goals. It seems implied that while many, or even most of the member countries agree in principle to specific sustainability concepts, it is politically very difficult to get official ratification and effective implementation.

The information presented in this document is dense and complex. It seems intended for policy makers and planners concerned with international agreements and negotiations. Anyone with interests in international sustainability issues, even as they apply to local issues and business, will gain valuable insight into global trends by reading this publication.

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