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BOOK REVIEWS

The Moon in the Nautilus Shell – Discordant Harmonies Revisited. From Climate Change to Species Extinctions, How Life Persists in an Ever-Changing World, D.B. Botkin. Oxford University Press, Oxford (2012). 424 pp., ISBN: 978-0-19-991391-6

A note of caution: The path of a book reviewer between remaining objective and still conveying his own opinion proved too narrow for me and this book. While I try to justify my opinion below, a proper assessment would have at least as many pages as the book itself.

Daniel Botkin is an experienced, well-known ecologist with over hundred scientific papers, a good dozen books and uncounted number of reports for governmental agencies on his track record. His experience in forest, but also marine, wetland and virtual ecosystems is certainly worth sharing and his view on the world should make for an interesting reading. “The Moon in the Nautilus Shell” is Botkin’s 20-years-on-sequel to “Discordant Harmonies: A New Ecology for the 21st Century”. The central theme of both books is the tenet of an ever-changing, ever-adapting nature, contrasting with the more typical view of balance, equilibrium and steady states of theoretical and conceptual ecology.

The book organises 15 chapters into four parts. Despite this layout, the book is really a jumble of anecdotes from Botkin’s professional and private life. Each of these anecdotes seems to serve one aim: to show how wrong current ecology is because it assumes equilibrium systems. This is, in my opinion, disingenuous. While theoretical ecologists teach equilibrium-type equation systems for their mathematical simplicity, the cutting edge of research, even the upper third of current population modelling studies are not necessarily equilibrium-based, although some rightly are: it’s horses for courses. Neither matrix population models nor logistic growth equations are necessarily inappropriate for an ever-changing system: if external forcing is allowed for, these equilibrium models are anything but steady state in their dynamics. On the other hand, equilibrium models have been extremely successful as hypothesis-generating models for evolutionary systems (e.g. game theory). Botkin disposes of all these approaches only because they asymptote.

Throughout the book, Botkin uses case studies to exemplify constantly changing nature: elephant management in Tsavo National Park, moose-wolf-dynamics on Ilse Royale, fire impacts on forest composition and salmon management in Oregon. All these examples feature the author as the

protagonist with common sense, but they dodge the issue of temporal and spatial scales on which to measure balance of nature. Most examples are, in my opinion, too short-term or too small-scale to be able to identify population dynamics. Only the salmon case study actually lasts more than one generation of the target organism. Furthermore, as Tukey quipped, the plural of anecdote is not data. Botkin nowhere in the book substantiates his point of view by a quantitative review of evidence. Plenty of papers are cited, but they are confirmatory to his point of view, not representative.

The problem with this book is that it intermingles correct and noteworthy statements with anecdotes that are supposed to work as metaphors. Botkin correctly rejects the common idea of a nature-in-balance model but presents as illustrations cases from noisy systems, thereby interpreting stochasticity as instability. He rejects the myth as well as the machine as a simile for nature, but then proudly presents his machine-like forest model and later delves into New Age-lingo such as “In the mirror of nature, we see ourselves” (a section in chapter 14). He rejects “equilibrium-based” concepts and models but offers no alternatives beyond arm waving: “we should develop and employ new approaches”.

Botkin places his book in the succession of Henry David Thoreau and Aldo Leopold. But his book is not like theirs, neither in intensity nor in profoundness. Only the last chapter (the Postscript) offers a balanced, if abstract, outlook on which wilderness to conserve, city life and ecosystems as well as a multifaceted view on biodiversity. If you wonder about the meaning of the title: it refers to the tidal signal in million-year-old nautilus fossils which allows us to reconstruct growing conditions in ancient oceans, which were, no surprise, variable.

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How Species Interact – Altering the Standard View on Trophic Ecology, R. Arditi, L. Ginzburg. Oxford University Press, Oxford (2012). 192 pp., £40.00, ISBN: 978-0-19-991383-1

The study of predator–prey interactions has a long tradition in ecology. Since 1925, when Lotka’s “Elements of