

thoughtful chapter by Geerat Vermeij on security, unpredictability and evolution, with (for me) a useful emphasis on modularity and redundancy.

Good stuff. But I read *Natural Security* with one question uppermost on my mind: how many truly new security lessons can be learned from nature? The connections made between natural and national security are often tenuous, and recognized as such by the authors. For instance, in the chapter 'The Infectiousness of Terrorist Ideology,' Kevin Lafferty and his colleagues ask whether 'the strengths and benefits of the infectious agent-terrorist ideology analogy [are] sufficient to warrant continued pursuit of its utility' (p. 204). Even though I enjoyed the chapter and was glad it was included in the book, my answer would probably be 'no.' More direct approaches, such as voter modeling (constructing mathematical models of opinion formation), might well be more fruitful. Equally impressive, and perhaps more directly useful, was the chapter by Dominic Johnson and Joshua Madin, 'Population Models and Counterinsurgency Strategies.' It focuses on the insurgency against the British in Malaya (1948–1960) and the current one against the United States in Iraq, looking at both through a lens of recruitment, carrying capacity and mortality.

Like many multiauthored volumes, *Natural Security* is easy to criticize. Despite the inclusion of the concept of modularity, I do not think enough is made of the importance of this concept in preventing the spread of a catastrophe, a lesson well learned from natural systems and also outside of them (e.g. portfolio theory in economics and vulnerability of centralized power grids). Globalization is now so vigorously promoted with no consideration of its dark sides (such as overemphasis on comparative advantage and the spread of crop monocultures, both of which can decrease food security [1]) that I wish such

issues had been dealt with more thoroughly. A chapter by Bradley Thayer is, in my mind, flawed by naive ideas from 'evolutionary psychology' – for example, that there is a human desire to dominate that can be explained by evolutionary theory. Space is wasted in a chapter on 'Selection, Security, and Evolutionary International Relations' by Gregory Dietl on a continuation of the ancient, vacuous discussion of whether 'species are individuals' [2,3]; the chapter fails to explain that most species do not fit any of Stephen Jay Gould's criteria for individuals.

As a minor annoyance, the editing of the book leaves much to be wished for – Thayer run in with Taylor in the list of contributors; weird typography of dates in boxes (Chapter 4); Jacob misspelled (pp. 149, 158, 283); and to me an aggravating lack of first-line hanging paragraphs in the bibliographies.

So where do I come out on the basic question? I rather doubt that the characteristics of natural systems provide many insights into basic issues of traditional security not otherwise obvious. But I could be wrong, and with a strong interest in such issues, I come out strongly in favor of the book, and in favor of looking more closely at the possible parallels. I am glad the authors put in the effort to focus on this complex question, and I think anyone with an interest in evolution, ecology and the human predicament will benefit from reading *Natural Security*.

References

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- 2 Ghiselin, M.T. (1974) A radical solution to the species problem. *Syst. Zool.* 11, 235–250
- 3 Gould, S.J. (2002) *The Structure of Evolutionary Theory*, Harvard University Press

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Book Review

An inordinate fondness for behavioural ecology

Behavioural Ecology edited by Étienne Danchin and Luc-Alain Giraldeau and Frank Cézilly. Oxford University Press, 2008. £29.99 (912 pages) ISBN 978-0-19-920629-2

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Behavioural ecology might always be perceived by some as adaptive storytelling. But at its best, behavioural ecology represents the exciting synergy between evolution, ecology and behaviour. Although this book might not be able to change the opinion of those who do not share my fondness for behavioural ecology, it clearly captures this impressive synergy. As I read this *Behavioural Ecology*, I could not help but compare it to the field-defining *Behavioural Ecology* books edited and written by

Krebs and Davies [1,2] and wonder whether this newcomer had any chance of supplanting it, or offering more than the other animal behaviour textbooks already available.

There are several interesting things about the structure of this book. First, although it is made up of chapters authored by different individuals, most chapters have one of the editors as a coauthor, and the editors have worked hard to maintain consistency and draw connections. Although this has been achieved more successfully in some chapters than others, it is an interesting approach that allows the textbook to include a variety of perspectives and areas of expertise. It is a middle ground that might not please everyone, but it has produced a challenging and

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broad text that captures the field of behavioural ecology. Another interesting fact is that many of the chapters were written first in French (for a French-language textbook) and then translated into English. Although I was dubious about this approach, the book is well written and, for the most part, very easy to read.

The academic level of the book is both its strength and its weakness. This text is more challenging than other animal behaviour textbooks aimed at undergraduates. It also deals more extensively with the complexity of the scientific process and addresses how much we really do not understand. However, there is substantial variation among the chapters, with some giving a very clear introduction to key topics (e.g. the chapters on foraging and sexual selection) and others presenting a challenging discussion of advanced topics (e.g. the chapters on life-history tradeoffs and cultural evolution). There are also quirky aspects to the chapters, mirroring the perspective of individual authors (e.g. the interesting but imbalanced focus on sexual selection in the conservation chapter and the focus on information in others). This textbook also does not spend much time on the mechanistic aspects of animal behaviour, and phylogenetic studies are given little attention. Instructors will therefore have to decide for themselves whether it is suited to their courses as far as coverage and level are concerned. However, with 6 broad sections broken into 20 chapters and covering over 700 pages, there is more than enough relevant information from which to choose.

What I liked most about this book is that it captures one of the best aspects of behavioural ecology as a field: it presents theory and empirical tests of theory in a way that no other recent textbook on animal behaviour has done. And (dare I say?) it surpasses the classic *Behavioural Ecology* texts in this regard by also bringing in quantitative

genetics and life-history theory. In my opinion, the theory could have been even stronger, but then I personally exhibit a fondness for theory not shared by everyone. A variety of models (including equations and analyses) are presented and explained clearly. However, the focus is on teaching specific models rather than modelling *per se*. It is also noteworthy that theory is not one of the three approaches to behavioural ecology presented in the first section (i.e. the phenotypic, genetic and comparative approaches), despite the fact that later chapters spend much more time on theory than on genetic and comparative studies combined. I would have also preferred to see more exciting new theoretical approaches, rather than only traditional theory.

Despite the charismatic cover picture, this is not a flashy textbook. The figures are simple and the online materials straightforward. The chapters also vary in how much they draw on new results and modern approaches. For example, there is not much focus on cutting-edge genomics or evo-devo. However, this textbook presents an impressive amount of interesting and challenging material, which is truly an achievement. I do not think it will replace the earlier *Behavioural Ecology* books that fostered my enthusiasm for the field [1,2]. It will, however, introduce students to the impressive and rigorous synergy represented by the field of behavioural ecology, and hopefully get them excited about how much theory has to offer evolution and ecology in general.

References

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- 2 Krebs, J.R. and Davies, N.B. (1981, 1987, 1993) *An Introduction to Behavioural Ecology*, Blackwell Scientific

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