

Remembrance of things past

An Introduction to Behavioural Ecology by (4th edn) Nicholas B. Davies, John R. Krebs, Stuart A. West. Wiley-Blackwell, 2012. £90.00/€106.30, hbk; £34.99/€41.30, pbk (xiv + 506 pages) ISBN: 978 1 4443 3949 9/978 1 4051 1416 5

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Among the most influential books in the field of behavioral ecology, *An Introduction to Behavioural Ecology* certainly stands out to the extent that it has been called ‘a classic textbook’. Arguably, many students in biology have been primed for the fields of animal behavior, sociobiology, or ethoecology by this book; in fact, one of them, Stu West, joined the established author-duo John Krebs and Nicholas Davies to produce this 4th edition.

It feels a bit like coming home when rereading a textbook, which, although it has a new appearance, still evokes those good old student days. It was back then that it came to me as a revelation that, in behavioral ecology, theory, natural history, and experimentation complement and advance each other in rich ways. Obviously, this was not my own original insight but the teaching philosophy of ‘the Krebs ‘n’ Davies’. The close interplay of theoretical foundations and predictions, experimental falsification, and new hypotheses that is used to explain the observed behaviors and has proved to be so successful for the field, is also one of the reasons for the success of the various editions of this textbook.

Stating that much has changed since the first edition appeared, over 30 years ago, is a platitude. Among the novelties that reflect the evolution of the field are (albeit) short discussions of animal personalities, and the link between neuroscience and behavior. There is an emphasis on sexual reproduction, with four chapters discussing mating systems, competition, and conflicts in various situations. Conflicts are also central in the four chapters on social behaviors, especially in the social insects. Color photographs have replaced most of the old black-and-white pictures, although perhaps for the sake of nostalgia, some of the original monochrome images have been retained, such as the escalating fight of red deer stags. However, some more effort in (re)editing the graphics would have been desirable: although most are very illustrative, some photographs and figures are grainy, not sufficiently trimmed to fit, or poorly aligned. In other cases, the added value of the chosen pictures is debatable: when illustrating visual mimicry in Australian cuckoos, why would one choose to show an at-first-sight rather imperfect example without discussing why this might be adaptive [2]? This is unfortunate, given the persuasive power of pictures; for instance, the simple drawing of a prairie dog burrow that is designed to create a constant airflow ([1], p. 257) is burned in my brain, along with the message that Tinbergen’s four ‘whys’ [3] are not to be used against each other but are in fact complementary.

From a didactic point of view, I like the way that current knowledge is presented, as an ever-evolving story where, in fact, one can never be absolutely sure about anything. Take, for example, the discussion of the haplodiploidy hypothesis for the evolution of eusociality. Within only a few pages, the reader is convinced by an intuitively evident argument (higher relatedness with sisters than with own offspring will favor altruism), then disappointed to hear that this was a naïve fallacy (because the lower relatedness with brothers offsets this relatedness advantage). Later on, relieved to hear that a female biased sex ratio reinstalls the hypothesis, the reader will find that this is disputed again a few lines further on where the reproductive value of males is shown to increase to mitigate any advantage. The last hope is split sex ratios, but even this has been challenged lately [4]. It does not seem absurd to predict that one will hear more about this in the years to come, and the authors rightly state that in some cases (such as the one presented) they had to overturn ‘what used to be conventional wisdom’. At the same time, without being patronizing to students, this is a great lesson in the scientific method, the history of science, and a motivation to scrutinize respectfully and critically what they read.

Actually, there are individuals who challenge, for instance, the relevance of kin selection. Given that the most fundamental question in behavioral ecology is how a certain behavior increases the (inclusive) fitness of an individual, the gene-centered view is a unifying theme in all 15 chapters. As found throughout this edition, alternative hypotheses are discussed and, hence, group selection is also raised and then dismissed again, based not only on its limited usefulness hitherto, but also on the difficulty to link it with experimental data. Although this may be a courageous attempt at a revolution, the Bastille of kin selection seems too well defended to be taken by a handful revolutionists.

Seeing the more traditional case studies being complemented by new and up-to-date, often exciting examples, which are explained in the characteristic plain prose, I can not but agree that ‘these are the very best of times to be a behavioural ecologist’ (p. 440).

References

- 1 Krebs, J. and Davies, N. (1981) *An Introduction to Behavioural Ecology*, Blackwell Scientific Publications
- 2 Langmore, N. *et al.* (2011) Visual mimicry of host nestlings by cuckoos. *Proc. R. Soc. B* 278, 2455–2463
- 3 Tinbergen, N. (1963) On aims and methods of ethology. *Z. Tierpsychol.* 20, 410–433
- 4 Gardner, A. *et al.* (2012) Haplodiploidy and the evolution of eusociality: split sex ratios. *Am. Nat.* 179, 240–256