



## Book Review

*The Genesis of Animal Play. Testing the Limits.* By GORDON M. BURGHARDT. Chichester: J. Wiley (2005). Pp. xvi + 501. Price £32.95.

One of my first questions of this book was 'testing whose limits?' Four hundred and six dense pages later, a vast amount of information, speculation and synthesis have passed my eyes and necessarily slowly, but I am still unsure what I have assimilated or what limits I have now transcended. Of course this may be simply my problem, but after reading this book I wonder why any ethologist would ever work on play since it appears to be both controversial and intractable to rigorous hypothesis development or testing.

That said, this book provides an exceptional review of the myriad of existing hypotheses on the functions of play, of the multitude of types of play, and of the many playful mammal species and their forms of play. It is necessary as a reference tome for developmental behaviourists, and contains fascinating facts. Chapters 1 and 2 cover the theory of play from a personal and historical perspective. It is humbling to learn that our 'modern' considerations of play behaviour were anticipated 150 years ago. This historical perspective will become even more useful in the digital age, when access to pre-1997 manuscripts requires using libraries rather than Google. Play definitions, attempts to streamline these definitions, and functional hypotheses as to why play and when play should be seen occupy the next three chapters, along with excellent examples of function and mechanism drawn from a wide range of species. Burghardt uses a Tinbergian dissection of mechanism, current function, development and evolution, and adds the subjective world experience of the playing organism. This is a powerful approach, but his applications to play appear to revolve around limited mechanisms (temperature, stress, neocortical control), functions and ontogeny associated with play fighting (a highly sex-specific form of play), and questions about pretend play with objects. There is a useful discussion of play contexts and motivational systems in his systematic attempt to define play. Chapter 6 synthesizes his approach to play with a number of diagrams and flow charts. It is interesting, but not completely successful, since almost as many questions are raised as are speculatively answered.

Seven chapters in Section II tackle phylogeny and the evolutionary origins of play for a range of animals from ants to platypus. Great examples, but the links back to his synthetic perspective are lacking and the comparative

approach used here makes assumptions about the number of times that play has arisen independently and about commonalities of functions. Since a similar form of play can serve different functions at different developmental stages in the same organism, it becomes confusing to apply the same term to a variety of activities and interactions in ants, birds, fish and mammals. Fish are currently an important model for testing all kinds of attractive hypotheses in animal behaviour, from social leaning and teaching, to innovation (see Reader & Laland 2003), and now Burghardt proposes that fish are the 'most successful vertebrates' in play terms. I'm unconvinced. Yes, many different kinds of vertebrates play, but proposing that the deep evolutionary origins of play lie in fish seems to me to be overly phylogenetically deterministic, and to state further that crabs, squid, spiders and other invertebrates are playing at the same level, using the same mechanisms and with the same functions as corvids, canids or primates violates Tinbergen's original separations of the 'five whys' in ethology and indeed the approach established on page 15 of this book. Burghardt is careful to point out that 'differences are as important as similarities' (page 379), yet why include these species unless the author genuinely believes that the roots of play lie over half a billion years ago?

After reading this book, I feel that I am even further from understanding those aspects of play that I have researched, and I have few insights into new directions to pursue. This is possibly because of the slightly confrontational tone adopted by Gordon Burghardt. Those of us who have explored the 'wrong' (irrelevant, unfruitful) hypotheses and who have not separated our types of play into the play processes used here are limited to simplistic observational models. But many others, students of play and those generally interested in why play exists, will find a great deal to interest them. These criticisms do not detract from the general value of this text, which lies in the synthesis and presentation of a huge number of examples and citations on the forms and functions of animal play.

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### Reference

Reader, S. M. & Laland, K. N. (Eds) 2003. *Animal Innovation*. Oxford: Oxford University Press.