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Psychologists at Play

A review of

The Genesis of Animal Play: Testing the Limits
by Gordon M. Burghardt

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Reviewed by
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Play has been an interesting but elusive topic in comparative psychology and related fields for more than a century. Gordon M. Burghardt has been grappling with its problems for nearly a quarter as long. In this volume, Burghardt explores the problems of defining and conceptualizing play along with the evolution and adaptive significance of behavioral patterns that might be labeled as play. The book features a wide-ranging comparative survey of play behavior.

Burghardt's volume is an example of comparative psychology at its very best—dealing with a difficult category of behavior with clear thought, free of some of the dogmas that have burdened some strains of comparative psychology in the past. Indeed, this book can be used as an exemplary model of how such a study should be conducted.

The first part of the book deals with the conceptualization of play; the second part deals with the comparative survey. The critical problem in the study of play is that of definition. Burghardt reviews several definitions of *play*, finding each wanting in various respects. He recognizes correctly that definitions should provide guides to research without constraining the search with the straitjacket of rigidity. He adopts a position that “the role of definitions in science is not to capture *the* truth, but to help us progress toward a more complete understanding of the natural world” (p. 49). This is a pragmatic approach that enables one to develop a working definition that is based on available knowledge but is subject to revision as one learns more—a pragmatic, scientific definition rather than one alleged to be truth-based.

In the end, Burghardt adopts a set of five criteria for labeling behavior as play, or with the “‘P’ word” (p. 310), as some would refer to it. He lists these criteria in greater and lesser detail at various points in the book. In one concise presentation, he writes that

> playful activities can be characterized as being (1) incompletely functional in the context expressed; (2) voluntary, pleasurable, or self-rewarding; (3) different structurally or temporally from related serious behavior systems; (4) expressed repeatedly during at least some part of an animal's life span; and (5) initiated in relatively benign situations. (p. 382)

With the first criterion, Burghardt means that behavioral sequences do not produce their usual consequences, such as when play fighting is not really related to resolving a conflict over a limited resource. According to the second criterion, play is typically engaged in voluntarily, spontaneously, and without coercion or overt reward. He is not bothered by the taint of anthropomorphism. According to the third criterion, the various elements that compose “serious” behavior are often out of sequence, exaggerated, incomplete, or precocious. Fourth, the behavior is displayed repeatedly, at least during a part of an animal's life, although it is less rigid than a true stereotypy. Finally, play usually occurs in intervals when there are few pressing demands on the animals—they are adequately fed, healthy, and free from stress. All five criteria must be met for a pattern to be classified as play. Burghardt tries to differentiate play from exploration, sensation seeking, curiosity, and stereotypies.

Of course, there are many kinds of play, and Burghardt does a good job of differentiating among them while recognizing that absolute barriers are impossible. Play can be divided into three broad categories: locomotor-rotational play, object play, and social play. These are useful guides, but, as he notes, “Are two dogs chasing a thrown stick engaging in locomotor, object, or social play?” (p. 84).

Burghardt discusses the major theories of play, such as the surplus energy theory of Friedrich Schiller and Herbert Spencer, the instinct-practice theory of Karl Groos and others, and the recapitulation theory of G. Stanley Hall. He uses these older theories as sources of elements that can be adapted to a contemporary approach rather than trying to choose among them. However, Burghardt is more interested in approaching the traditional questions of ethology and comparative psychology. Niko Tinbergen (1963) noted that the science of animal behavior is concerned with four sets of questions. In essence, these are questions of the immediate causation, development, evolutionary history, and adaptive significance of behavior. Although he addresses all four sets, Burghardt is most concerned with the latter two. However, consistent with his earlier work (e.g., Burghardt, 1997), he adds a fifth concern, that of private experience.

Burghardt wants to add to the study of animal behavior questions concerning the personal or phenomenal world, subjective experience, patterns and processes of life as experienced, and emotions. In this, he follows in the path blazed by Donald Griffin (1976) as part of a movement to restore the study of private experiences to animal behavior research. Thus far, this approach has not found many adherents in the field—not because scientists do not believe that animals have private experiences and emotions

but because they do not see how they can ever study them. However, the field has moved in Griffin's direction, and this has had great heuristic value in stimulating interesting research.

A related problem concerns the use of anecdotal evidence and anthropomorphism. Burghardt wants neither to dismiss anecdotes nor to accept them at face value. Rather, he recommends a critical approach in which anecdotes are recognized as suggestive—to be used when more substantive data are unavailable and in support of tentative conclusions that will be subject to further study. Many important events occur but once, and it would be foolhardy to ignore them completely. Similar, he recommends a critical anthropomorphism. We cannot and should not assume that animals lack conscious experience any more than we can assume that their experiences are just like ours. Imagining ourselves in the position of the animal and reflecting on how we would experience this position can be a useful procedure for generating experimental questions—but must not be accepted as the basis for general conclusions.

Over half of the book is devoted to a phylogenetic survey of play in different species of animals. Burghardt's essential message is that play is widely distributed phylogenetically, although the evidence is less convincing in phylogenetically older groups than in recently evolved species. However, his interest is not in providing a mere catalog of play in this or that species. Rather, he wants to explore the limits of play. This is why questions of definition are so critical. When one sees a group of children on a playground, one need not quibble over definitions of *play*. However, when one is considering honeybees or cockroaches, problems of definition are focal.

Other authors have reviewed the literature on play in mammals in considerable detail. This holds little interest for Burghardt, who devotes just 21 pages to the placental mammals. By contrast, the longest chapter in the book (49 pages) deals with amphibians and fish, despite the realization that the literature is “mostly descriptive, anecdotal, and, too often, inconclusive” (p. 313). Burghardt explores boundaries rather than mining well-explored areas.

Burghardt seeks generalizations about the determinants of play in placental mammals, but it is hard for the reader to dig out his views. He uses marsupials to test the generality of his beliefs about the distribution of mammalian play. Burghardt concludes that brain and body size are broadly correlated with the extent of play. Locomotor, object, and social play appear to have evolved multiple times independently in the two groups. Birds provide yet another group with much evidence for play and the potential for comparative analysis that will reveal the roles of “phylogenetic, ecological, life history, physiological, and central nervous system variation” (p. 276) in affecting the distribution of play. Alas, such analysis must be left for the future.

Burghardt has long been a staunch advocate of the study of reptiles and other so-called lower species of vertebrates in

comparative psychology. As one might expect, there is a detailed chapter on play in reptiles, the star of which is a Nile soft-shelled turtle named Pigface. Burghardt finds the evidence for play in reptiles to be solid, although play appears to be distributed spottily when ecological, life history, and physiological factors converge in an appropriate, if not yet clearly delineated, manner. Burghardt continues his quest, finding “evidence, as problematic as it may be, for the existence of types of behavior in fish that some consider the hallmark, indeed the source, of much of what we consider distinctly mammalian, or even human” (p. 357). He also finds evidence for some kinds of playlike behavior even in invertebrates, the most suggestive being locomotor play in honeybees, object play in octopods, and sensorimotor play in water stick insects.

Burghardt's generalizations become clearer in the final chapter (pp. 382, 397). Several of his 12 conclusions can be mentioned here: (a) Play is recognized by the aforementioned five criteria; (b) play is a heterogeneous category with diverse phylogenetic and developmental trajectories; (c) play is found in “a wide range of animals, including marsupials, birds, turtles, lizards, fish, and invertebrates” (p. 382); and (d) play is often associated with active lifestyles, moderate to high metabolic rates, generalist ecological needs, and abundant food resources. Object play is found most often in species that eat meat, and locomotor play is most prominent in species living in three-dimensional environments. Other conclusions follow, related to Tinbergen's (1963) four questions of the development, evolution, neural bases, and functions of play. As he concludes the book, Burghardt cannot resist the temptation to write about “play, leisure, culture, and the rise of civilizations” (p. 399). This is surely the most speculative section of the book. In general, the production of the book is excellent, the index is useful, and the reference list is extensive. I found only a few small typographical and grammatical difficulties.

This is a very solid contribution from a comparative psychologist who has thought long and deeply about a very difficult category of behavior. He considers play in all of its aspects and provides what is easily the broadest comparative survey of play that is available. The book is comprehensive rather than exciting. Many editors would have insisted on numerous cuts to make the book read more easily. Burghardt's editor allowed him to be thorough, and the reader benefits from Burghardt's breadth and depth. As a result, the volume is a useful reference that provides a clear path through the conceptual difficulties associated with the concept of play. This is a very important book that is essential for anyone seeking to understand play in a comprehensive manner.

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