Book Review

A review of *Animal Social Complexity: Intelligence, Culture, and Individualized Societies*, by Frans B. M. De Waal and Peter L. Tyack, editors, 2003. Cambridge, MA: Harvard University Press, 616pp. ISBN 0674009290. $49.95 USD. Hardcover.

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This edited compilation showcases several diverse biological studies of animals, including non-mammals, to explore the origins and evolutions of intelligence, culture, and complex societies. I have often wondered, as I imagine many others have, whether the traditional dichotomy between human and animal is viable. As this book illustrates, some bastions humans have used and still use to separate ourselves from animals include our use of language (which is taken to mean something more than communication, a meta-communication), and rich and distinct cultural heritages. The ability to create language and culture derives from, many would argue, a singularly evolved intelligence, which only humans have attained.

The contributing authors to this dense and thought provoking collection of essays work to challenge traditional cognitive and consciousness perspectives by asking fundamental questions, which drive to the heart of what it means to be human and how and where we are located within the web of life. Themes and questions explored include: What is intelligence? How can one be persuaded of another persons or species' intelligence, or lack thereof? What brought about the emergence of intelligence? In what ways are communication, language, self-awareness, and culture related to intelligence? In seeking a discussion of these questions, the editors take a broad comparative perspective, which includes examples as varied as el-

Complicity: An International Journal of Complexity and Education
Volume 1, Number 1 • pp. 109–112 • www.complexityandeducation.ca

ephants, hyenas, songbirds, and sperm whales. The provocative theme that resonates through this menagerie explores the influence of social complexity on the evolution of intelligence.

Each of the societies of animals highlighted in this impressive collection of research, with the possible exception of birds (Chapter 18), are capable of individual recognition. When one is able to recognize another as 'an other' and one is simultaneously living in a group, a fascinating dialectic emerges between the self and the group. Relationships become crucial, and the cognitive demands of creating, mediating, and maintaining social relationships in such individualized societies might have been the impetus for enhanced intelligence. This thesis, the social intelligence hypothesis, is discussed from varying perspectives, which includes an array of research methods with different animal species.

Many of the contributing studies (especially the case studies) incorporate a quantitative and scientific experimental component, which can be daunting to those who are not specialists in biological research. Some of the language is highly technical, and the mathematical effort required to follow many of the quantitative arguments may hinder a novice reader's sense-making abilities. At times, the language is mechanical and somewhat positivistic, with authors' foregrounding the transmission of knowledge and culture, and scholars seeking mechanisms through which traits are acquired. The contributors seem grounded in a modernist paradigm, the determinism of which can challenge readers familiar with nurturing, critical, feminist, and post-modern philosophies (Fleener, 2002; Noddings, 1992). The mechanistic nature of the contributors' philosophies appears especially apparent in the absence of substantial discussions in relation to the inferences humans must make and the assumptions inherent in observing other animals.

However, once one learns how to navigate the syntax and quantitative focus, the questions raised in these studies deeply probe such fundamental ideas that one's own perspectives are almost certainly to be challenged. The book consists of five sections, (1) Life history and brain evolution, (2) Evolution of cooperative strategies, (3) Social cognition, (4) Communication, and (5) Cultural transmission.

In the first three chapters the authors discuss the possible role of life history in the study of social complexity and cognitive evolution. The authors describe life history as a summary of statistics of "major life events" that are specific to a species. These events include maximum life span, age at first reproduction, duration of gestation, litter or clutch size, interbirth intervals, and age at weaning (p. 11). Providing examples from primates, dolphins, and elephants, these chapters illustrate potential ways in which life history might influence the emergence of social complexity and thus, perhaps, enhanced cognitive abilities.

Illustrated through chimpanzees, hyenas, and other cooperative mammals and birds, complexity can also arise as individuals struggle to balance the need to cooperate with group members to gain access to resources against the need to also compete with members for a share of those resources. Contributing authors in the second section of the text provide insights into why cooperative tactics evolved, suggest why they are not more widespread, and posit how intricate cooperative strategies may influence the emergence of intelligence. Embedded within these discussions of cooperation and competition is the realization that kinship relations are another factor in social complexity. The relationships necessarily entail having a mind nimble enough to recognize a hierarchical society based on kinship and to viably place other individuals within that hierarchy.

The ways in which animals sort through all of this social information, enabling them to classify relationships and create patterns of social behavior, are further explored in the third section of the text, which is devoted to social cognition. Drawing from studies with sea lions, monkeys, and chimpanzees, the authors explore how animals may act to create an understanding of their social environment and perhaps use this knowledge to solve intricate and complex problems.

The fourth section, on communication, ponders the influence communication might have on the evolution of enhanced cognitive abilities. Encompassing animals utilizing primarily verbal modes of communication (parrots, bats, and dolphins) as well as those relying mainly on non-verbal means of communication (primates), this section focuses on the ways in which animals communicate in their natural environments, rather than on how animals might learn a second, human language like sign language. Contributing authors highlight the incredibly vast and precise information many animals are able to exchange and comprehend. By exploring various modes of communication the authors foreground how the complexity of communication might be related to advances in social complexity and intelligence.

Questions of culture—existence, emergence, and transmission of culture—are explored in the final section. This collection of essays has perhaps the strongest direct link to the study of education. Philosophical discussions of culture would be incomplete without an attempt to make sense of the processes of teaching and learning. Several different definitions of culture are offered, ranging from the relatively static and traditional to a conception of culture as a process rather than a final product. McGrew, in particular, offers an insightful, amusing, and approachable treatise on culture as he presents a synopsis of the range of opinions on the question of the existence of animal cultures.

In sum, to quote Tyack, the "two basic themes of this book are that the study of animal social complexity and intelligence requires a broad com-

parative perspective, and a diversity of approaches from ecologically valid observations of wild animals to careful experiments of cognitive abilities" (p. 361). This compilation presents a rich and diverse collection of essays that investigates both research approaches and research participants. De Waal & Tyack's text challenges us to extend our understandings and explorations of complexity beyond the human world to seriously investigate and learn from the animal kingdom as a critical method needed to enrich our own understandings of the relationships between social complexity and cognition. To decide whether a volume such as this is appropriate to incorporate in your educational research or library, one must consider (to use language common to the book) whether the costs of maneuvering through jargon and technical arguments are worth the benefit of a better informed understanding of the wonders of the diverse life teeming on this brilliant planet. In my opinion, the journey is well worth the effort.

References

Fleener, M. J. *Curriculum Dynamics: Recreating Heart*. New York: Peter Lang Publishing, 2002.

Noddings, N. The *Challenge to Care in Schools: An Alternative Approach to Education*. New York: Teachers College Press, 1992.