

This is a great book for those starting out in the field. It will provide food for thought when choosing a research species, as well as specific advice to those who have already chosen their species. It provides some interesting and enjoyable accounts of a variety of problems that authors have both encountered and solved when starting to work in (what are often now) well-established field sites. Lily Johnson-Ulrich, Kenna Lehman, Julie Turner and Kay Holekamp's chapter on their hyena research really brought the experience of establishing a field site to life in a way that was reminiscent of my first reading of Mark and Delia Owens' *Cry of the Kalahari* as a PhD student, and similarly inspiring. Irene Pepperberg's chapter on grey parrot cognition showed the insight that it is possible to gain by focusing decades of research on one particular species of interest, while also pointing out the nearly complete lack of field research on this behaviourally important and endangered species. The species covered in this book range from those that are nearly, if not completely, impossible to bring into a laboratory, to those that are impossible to study anywhere else. There are a good range of species in between these two extremes, showing the knowledge that can be gained from studying species in the wild as well as under more controlled laboratory settings, and what understanding can be gained by crossover between lab and field. The evident expertise of each author writing about the species they have studied, often for decades, is impressive.

I would have liked to have had more detailed coverage of the current state of cognitive research on each species and, as someone who has struggled to implement cognitive tests in the field, I would have liked the field work tips to be slightly more practical in nature. Some of the chapters were lacking in detail about conceptual issues and research findings, with a heavy emphasis on methods. While the title leaves no doubt about this focus, it seemed somewhat incomplete to get such a brief review of cognition research in some (though not all) of the chapters. Many of the chapters focus heavily on what research has been done rather than what has been found, with a fairly heavy reliance on either the background knowledge of the reader, or their willingness to research the area in more detail.

Having said that, this book is a real celebration of the progress that has been made in the field since pioneering cognitive ecology work in the late nineties. At that time, there was an active movement to take the study of animal cognition out of the laboratory by encouraging behavioural ecologists to consider the selective forces shaping animal cognition specifically, spurring a whole field of research into animals' adaptive cognitive specialisations. The ground-breaking comparative work of founders of this field, such as Russell Balda, Nicola Clayton, David Sherry and Sarah Shettleworth, has paved the way for the huge diversity of cognition work presented in this book. The book's focus on taking cognitive testing into the wild shows how much the field has expanded from exploring the underlying and ubiquitous principles of learning (which provide the cornerstone for current researchers) to making and testing predictions about cognitive abilities based on the

unique pressures faced by any particular species. The key achievement of this book is that it showcases the influence of the cognitive ecology 'revolution' and highlights how experimental psychology and ethology have come together in an unprecedented way. This book will inspire new researchers by showing them that it is possible to study cognition in any and all species, and by giving them the foundation to start their own investigations into the cognitive abilities of many more, as yet unstudied, species.

Lisa A Leaver,
Centre for Research in Animal Behaviour, University of Exeter, UK

Critical Terms for Animal Studies

Edited by L Gruen (2018). Published by University of Chicago Press, Chicago 60637, USA. 448 pages Paperback (ISBN: 978-0-226-35542-9). Price \$US32.50.

Critical Terms for Animal Studies is an intellectual delight. Each of the 29 chapters provides an overview on a particular term (eg 'pain', 'behaviour', 'rights', 'sanctuary') that has significant relevance to animal studies (including some terms, like 'abolition' and 'postcolonial', that do not immediately spring to mind). Every chapter provides ideas to engage you and provoke thought. As Gruen notes, a variety of 'missing' terms one would expect, like (eg) 'agency' and 'anthropomorphism', are covered within multiple entries (and are obvious in the index), though other terms like 'agriculture', 'habitat', 'religion', 'fictional animals', 'wild', and 'environmental ethics', do not much appear. Authors, although typically quite thorough in their presentations, are not always all encompassing in their assessment of terms; each chapter might best be thought of as an elaborated reflection on a term, gathering insights for the reader to ponder. Ideas resonate with and sometimes contradict each other across chapters. In her excellent introductory essay, Gruen acknowledges that animal studies is not a unified field with agreed upon objectives, but rather encompasses diverse worlds of thought, discourse, and action concerning animals (which includes humans); she wisely edited with a view to include this diversity. Although each chapter is entitled by one term, every chapter examines the ramifications of the ideas represented in these terms for animals and, often, life in general.

Those concerned with non-human animal welfare, ethics, and rights will find much to engage them. In fact, almost every chapter rings with implications about human responsibility toward other animals, or the natural world. Palmer and Sandøe offer a satisfying overview of the research about, and benefits of, caring for non-human animal 'welfare', acknowledging agreement (eg) that many of these animals' natural activities and desires should be satisfied and their suffering diminished, but detailing the problems inherent in measuring whether or not these goals have been accomplished (see also Varner on 'sentience'). Related, is Braithwaite's discussion of the difficulties surrounding how we detect 'pain', the experience that propelled so many authors to begin the continuing and expanding narrative about human moral responsibilities toward other animals. While arguing that we need to maintain

the distinction between the material basis for pain in tissue damage (detected by nociception) from the experience of pain as *painful* (pain's "affective component"; p 256) for the scientific purpose of learning about pain (given that these can be separate phenomena in humans), Braithwaite presents the difficulties in determining exactly when animals are affectively in pain. Nevertheless, it seems reasonable to assume, for practical purposes, that the two phenomena occur simultaneously, as Varner argues in discussing 'sentience', where suffering (which includes more than pain) exhibits the same difficulties as pain in its determination. (A comparison of the approaches of philosopher Varner and scientist Braithwaite is instructive).

Marino details the many negative consequences of 'captivity' for non-human animals, in the end attributing the current existence of zoos, aquaria, and other forms of captivity to the human desire to feel superior to and separate from non-human animals. Certainly, the history of the many forms of captivity humans have enacted supports their derivation from and/or resulting in feelings of superiority and separateness from other humans as well as non-human animals (Kalof & Resl 2011; see also Kim on 'abolition'), but Marino's essay unfortunately provides no proposal for how non-human animals currently in captivity are to be cared for should we end their confinement. As Kafka's (1917/1993) fictional ape Red Peter discovered, no matter what our choices to end captivity, there may be no way out. Pachirat notes that even providing animals with a 'sanctuary' does not end their captivity and given how interdependent all the denizens of the world are, one might argue that human choices have led to something comparable to global captivity. In Pachirat's view (p 351), having captive sites be sanctuaries allows humans to re-envision the terms of the confinement: those running sanctuaries must negotiate a series of critical tensions, including between freedom and management, wildness and imperialistic racism, domination and mutual attunement, and single optic versus multi-optic analyses of power and oppression. Sanctuary's liberatory promise lies not in a resolution of these contradictions but rather in its day in and day out exploration of them in the context of embodied, specific, interspecies relationships of mutual attunement.

Although reflection on some or all of these negotiations is likely present in many other contexts of captivity, be it pet-keeping, farming, or zoos, the vision of "social justice" (p 351) promoted by the creation of sanctuaries provides a different base upon which to think of them.

Other authors examine an array of approaches attempting to do good or diminish or vanquish the bad in our relations with non-human animals. Crary delineates diverse forms of 'ethics' applied to non-human animals, characterising traditional approaches as viewing the world and its inhabitants as existing independent of moral values (which are then applied to it), and non-traditional approaches as viewing moral values as part of the fabric of the world. For example, a traditional approach might concern itself with evidence for self-awareness, and then elaborate how self-awareness is a morally relevant characteristic; a non-traditional approach might examine an individual's life, focusing on what would allow that individual to develop fully whatever capacities that individual has. Pachirat elucidates how these approaches play out in his discussion of

'sanctuary'. One interesting line of thinking that, surprisingly, is not approached in this essay, given the standpoint of morality as part of the world's fabric, is whether or not, or in what ways, some non-human animals are moral (Crane 2016). Korsgaard suggests that morality may be uniquely human based on species-specific human 'rationality', with resulting consequences for our responsibility toward non-human animals. (Korsgaard also acknowledges other forms of rationality shared by human and non-human animals, such as acting intelligently and intentionally). Stilt provides ample evidence that the 'law' is not likely to be a useful means for enacting ethical activities using either traditional or non-traditional approach, where a focus on beneficial welfare for non-human animals (eg, dogs, laboratory primates) means that an individual is little more than an exemplar of its species (see also Dayan on 'personhood'), and a focus on securing benefits for an individual non-human animal requires a revision in how we think about non-human animals in general, as in the Nonhuman Rights Project (Wise 2000). Stilt posits that we should use studies in ethology and animal behaviour to learn what is best for non-human animals if we are to use the law to benefit them. McKay focuses on problems of 'representation' of animals in the legal sense, as well as in the sense of portrayal. He notes that these senses are inter-related and posits that we need to use not only the methods of science, but also those of the arts and humanities, to provide honest portrayals. After acknowledging that cultural practices will influence representations, he (p 318) states that: "an impulse to hold such [cultural] portrayals [of nonhuman animals] to account in terms of their relative interest in actual animals' real ways of life, their interests, and so on, properly persists, and this must surely be based on the developing knowledge about animals that academic inquiry delivers by offering new portrayals of them".

McKay also briefly mentions mental representation, but seems to view the evidence for this aspect of the term dubiously, given ambiguities about the accuracy of any form of representation; yet surely our understanding of animals' mental representations can go a long way toward understanding "actual animals' real ways of life, their interests, and so on."

To use the nomenclature of Crary, traditional ethical approaches rely on notions of 'rights', 'personhood' and 'rationality', and these are ably discussed, respectively, by Kymlicka and Donaldson, Dayan, and Korsgaard; within a traditional approach, Sebo and Singer calculate the consequences of different forms of "effective" animal 'activism' for animals. Non-traditional ethical approaches appealing to individuals are also presented. Gruen thoughtfully articulates ideas about 'empathy', directing attention to her view of "entangled empathy" as an ethical method to engender care for animals. Entangled empathy uses imaginative responses to understand another's position but includes strong desires to help the other when in need. Gruen defines the method of entangled empathy as requiring the desire to help, which is important in that empathy itself need not produce this desire; con artists, for example, can be highly empathic. Other moral emotions, such as anger, may be more useful in inducing action to benefit another (Kasperbauer 2015). Pick, writing on 'vulnerability',

offers an opposing view, that understanding another's helplessness leads to a desire to harm the other, but also acknowledges that it is our power over non-human animals, including the potential for violence, that leads to their vulnerability (which seems to me the more likely direction of causation between violence and vulnerability). She also presents (among diverse interpretations of vulnerability) the idea that we must avoid perceiving non-human animals, because of their vulnerability, too much as victims requiring care, which would lead us to adopt "a paternalistic attitude with regard to their protection and welfare, and failing to offer workable alternatives to our current treatment of animals" (p 422); instead, we need to acknowledge, examine and disentangle the extensive power dynamics with humans in which non-human animals are enmeshed. Relatedly, Potts and Armstrong examine being 'vegan' as a potential goal for animal studies, along with political, cultural, and personal issues relevant to veganism.

Unfortunately, there is not enough space to engage with each author's discussions of each term in the book, so I briefly mention the rest. Horowitz, King, and Andrews, respectively, insightfully explore the psychology of non-human animals in 'behaviour', 'emotion', and 'mind'. While most entries in the book focus on individuals or individuals in relationship, a few examine our responsibilities to the biosphere, including how some humans' ways of thinking preclude or awaken awareness of such responsibilities: 'anthropocentrism' (Probyn-Rapsey), 'biopolitics' (Wadiwel), 'extinction' (van Dooren), 'life' (Kohn), 'matter' (Stanescu). Other entries concern topics that are bound to arise in discussions of animal studies: the delineation, meaning and import of relationships among biological groups: 'kinship' (Fuentes & Porter), 'sociality' (Willett & Suchak), 'species' (Ritvo); and the ever-present connections and disconnections to power, especially in relation to class, race, and (less discussed here) gender and sex, in our thinking about animals: 'abolition' (Kim), 'difference' (Weil), 'post-colonial' (Deckha), 'vegan' (Potts & Armstrong). Complicated and nuanced thinking is provided when questioning in what ways our treatment of non-human animals might be compared to slavery, specifically race-based slavery in American history — a recurrent topic throughout the book that gets even more complicated and disturbing the more we examine historical documents that directly compare human slaves and domesticated non-human animals (Kercsmar 2015). The long-standing comparison between slavery in ants (eg Pamminger *et al* 2013) and humans is unmentioned, perhaps because there is no resonance of implied identifications between the two. Throughout the essay, minor differences in conclusions are engaging, as (eg) when Deckha's attention to postcolonial ways of thinking seems to mesh with Kohn's view of animism as an attitude toward our world that will benefit everything in it, but they differ in their resulting attitudes toward hunting. The extension by Fuentes and Porter (p 183) to include, as kin, "those closest to us in space, time, and flesh" and thereby make "kinship, by definition, a multispecies endeavour" is thought-provoking, but made me wonder at how far this should go: should we term the relation between one's body and the HIV virus as "domestic violence?" As these comments indicate, terms, being multivalent, that are applied to human animals may have transformative implications for

their meanings when applied to non-human animals, and *vice versa* (Mitchell *et al* 1997; Crist 1999), producing a mind-boggling ricochet in awareness between salient similarities and difference. Although many authors inveigh against the human/animal binary, the separation seems omnipresent throughout many of the essays. Think of this question: In what ways do non-human animals bear responsibility for their actions? Under most philosophical views of personhood (which contrast strongly with legal views, as Dayan notes), responsibility is an essential requirement (Mitchell 1993), yet non-human animal responsibility is not addressed as part of 'personhood' (Dayan), and only human responsibility is addressed in relation to 'rationality' (Korsgaard). It may be hopelessly anthropocentric to expect non-human animals to bear responsibility for their actions, but if only humans do (as Korsgaard suggests; cf Crane 2016), a significant component of the human/animal binary remains solidly in place. Weil's discussion of 'difference' reflects on the many confounding sources of sameness and difference in our thinking about ourselves in relation to non-human animals and back again.

Critical Terms for Animal Studies is not intended as a book for an introductory undergraduate course; most of the essays require exposure to a diverse literature that is likely to develop during a liberal arts education that encompasses the arts and humanities, the sciences, and applied fields, whether or not this education was specifically attuned to animals. My sense is that the book is for animal studies scholars, teachers, and mature college students, so that they can be aware of the minefields they are entering by endeavouring to write, teach, and otherwise think about animals.

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Robert Mitchell,
Lexington, USA