

hard and when the benefits of finding a novel food source are high (avoid starvation), compared to the costs of innovation such as increased predation risk. In contrast, when animals are not food deprived, the benefits of innovation might be diminished. However, the costs of innovation may also be reduced in the 'luxurious' situation of captivity (low predation risk, plenty of food), and this may explain why innovations are often reported in captive, provisioned primate populations, such as found in zoos. The importance of an enriched environment promoting exploratory behaviour is well known from work on rats, but applies broadly. Juveniles are shown to be more exploratory and attracted to novelty than adults, there may be particular windows for song learning early in the life of birds, and all these factors can inform captive management. Innovation may be particularly important for animals destined for release to the wild (whether captive born or rehabilitants), and although there is evidence to suggest that pre-release training may have little influence on survival to two years in lion tamarins, exposure to variety and novelty and opportunities to explore and manipulate may still be important, especially in the long-lived, slow-maturing orang-utans. This book has demonstrated that animal innovation occurs in a broad variety of taxa and that innovation may be underpinned by novelty responses, exploration and curiosity, individual and social learning, insight, creativity and behavioural flexibility. This suggests that captive environments that are rich in opportunity (through offering diverse environmental, foraging and even social opportunities) may also provide good conditions for studying the expression of innovation.

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Animal

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The human animal is a very particular one. She does not only go on living her life but also reflects on why she does what she does and how she should do it, and on what makes her different from (or similar to) the other animals. It is this latter topic — of sameness or otherness — that Erica Fudge sets out to explore in this small but intriguing book. It is edited in a series called 'Focus on Contemporary Issues', and its cover carries a picture of a grinning chimpanzee; one we later get to know was called Ham, and became famous in 1961 when he made a NASA space trip and experienced weightlessness.

In addition to the introduction and conclusion, the book has three main chapters. In the first chapter, 'Visible and invisible: questions of recognition', Fudge explores the ways in which humans interpret animals in their different roles: as pets and as producers of the meat we (might) eat and the furs we (might) wear. She provides a brief historical

overview of the status of pets, and questions — both from a historical and a more contemporary perspective — whether pets are really to be considered animals at all. A pet is maybe rather "a pet first, an animal second". In bringing up the topic of food-producing animals, Fudge draws upon her own childhood experience of seeing rabbits as cute pets and being served rabbit pie (albeit disguised as 'chicken pie'). She discusses the distinction that the English language makes between the animal and the meat that comes from it (originating from the time of the Norman invasion, when those who looked after the animals were Saxons and used the English terms, whereas those who talked about the meat were Normans and spoke French), and other processes which serve to place a distance between living animal (same) and meat (other). The final section of this chapter shows us how wearing fur has moved from being an enviable demonstration of wealth and sexuality to an immorality, and back again to something nearly acceptable. Fudge suggests the backlash of the anti-fur movement or the return of the fur industry has to do with the success of fake furs: as fake furs have become nearly indistinguishable from real furs, wearing something that looks like fur no longer means running the risk of being publicly offended.

In the second chapter, 'Real and symbolic: questions of difference', Fudge explores the paradoxes of similarity and difference in how animals are represented in literature and films for children. A feature that many texts and films have in common is the communication between animals, or between humans and other animals. Fudge suggests that this represents a wish to be able to communicate with animals and asks us:

"Why is it that these other beings are so central to the child's engagement with the world? Animals in books speak to us, sometimes literally. The reason for this centrality of representations of animals in these books might be that they offer a fulfilment of one of the key desires of our lives. This is a desire that begins with ease in childhood and which becomes — as the adults in some of these books [sic] show — more and more complex and melancholy with age. We might argue that the desire to comprehend and communicate with animals is infantile, but if we do not have these narratives of communication ... then we will lose contact with a large part of our world. If I cannot say that a dog is sad, what can I say that it is? In a sense, without anthropomorphism we are unable to comprehend and represent the presence of an animal. This is one of the problems of anthropomorphism that needs to be explored."

(I couldn't agree more with this later statement but, unfortunately, Fudge doesn't explore the question further in this book, so it is just to be hoped that she will in coming writings.)

From our early XXIst century viewpoint, the border between human and non-human may seem rather distinct, but, in the two last sections of this chapter, Fudge suggests that this may be a temporary position. She does this by pointing both backwards and forwards in time: backwards to the medieval Bestiaries, in which animals were described as representatives of different moral characters rather than

specimens of the natural world, and forwards to the potential of xenotransplantation in challenging the border between human being and non-human animal. In this chapter, Fudge enters the area of animal experimentation, and it should be pointed out that some of her conclusions are a bit premature. It is true that species differences sometimes reduce the validity or completely invalidate safety tests (as in the infamous case of Thalidomide), but this does not mean that for all experiments “if the animal is not like a human then the experiment is pointless”. Neither does it seem appropriate to conclude that the need for organs for transplants is a consequence of unhealthy human lifestyles: many transplants are performed to replace organs with congenital dysfunctions.

The third chapter, ‘Intelligence and instinct: questions of power’, focuses on research into animal intelligence, from Clever Hans to Washoe the chimpanzee and Koko the gorilla (for some reason not Alex the parrot). Two very important observations come out of this analysis. One, which Fudge has already touched upon in the previous chapter, is the human bias in designing these experiments, and the focus on asking the animal to learn human language rather than the humans attempting to understand the animals: “To view the thing-in-itself rather than to train the animal to be other-than-itself seems to be the most obvious way of understanding chimpanzees, gorillas and their non-human cousins.” Second, the risk for over-interpretation of results, “of making meaning where none exists”. We certainly need to consider this risk also in the study of animal welfare.

Erica Fudge is Senior Lecturer in English Literary Studies at the School of Arts, Middlesex University, London. After having been attracted by the elegant cover design, it was the background of the author that made me decide to read this book. Familiar as I am with the views of natural scientists and philosophers, I was very curious to know how a person with a literary background would approach the topic. Reading the book was rewarding: Fudge’s style and language is an example of clarity, and, rather than confusing the uninitiated reader with technical jargon, she explains references to concepts such as postmodernism. But I can’t help feeling at times that a bit more consideration of natural history would help provide a fuller answer to the question. Fudge joins the large group of writers who overlook the fact that animals do not form one homogenous group that can be treated in the same way. Different species of animals have different mental capacities, and these have consequences for our obligations and behaviour towards them. The potential for self-consciousness and perception of the future, which makes any instrumental use of the great apes questionable, is less of an issue when considering activities such as fish farming, which on the other hand have their own ethics and welfare problems. But this common mistake does not take the edge off the message of the book: there are real inconsistencies in how humans behave towards other animals and there is much to be learnt and discussed regarding how we think about our fellow creatures. I’m convinced that this book and the field of study it represents — animal studies in

the humanities — will be able to contribute much to our understanding of animal issues and of animal welfare.

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Applied Animal Endocrinology

EJ Squires (2003). Published by CABI Publishing, CAB International, Nosworthy Way, Wallingford, Oxfordshire OX10 8DE, UK; <http://www.cabi-publishing.org>. 234 pp. Paperback (ISBN 0 85199 5942). Price £30.00; US\$55.00.

This volume fills a very important gap in the book market. Its concern is primarily the applications of endocrinology in food animal farming. It therefore briefly summarises the basic endocrinology, passing quickly to applications but giving enough basic science to allow the reader to appreciate the details of mechanisms of action and problems associated with the (mis)use of hormones for production.

The initial chapter sets the scene with a broad definition of the subject as covering all chemical messengers, thus leaving room to include such elements as the effects of chromium administration in a later chapter. Each group of hormones is introduced in its structure and function, covering modern understanding of synthesis and secretion, receptor–ligand interaction and feedback control mechanisms, and duration of action, metabolism and degradation. Specificity, achieved by receptor variants, is included together with intracellular signalling pathways evoking cellular responses. Chapter 2 deals with assay methods ranging from whole animal to cellular and sub-cellular methodologies, giving helpful descriptions of the techniques involved. This chapter introduces the applied aspects involved in delivery systems for chemical messengers, and the problems associated with residues in carcasses destined for human consumption. The methods of production of transgenic animals are also briefly addressed.

The heart of the book is covered in Chapters 3–5. In Chapter 3, applications of endocrinology in growth and production are described, with a strong emphasis on carcass composition and quality. The effects of the following are considered: anabolic steroids, growth hormone, β -adrenergic agonists, thyroid hormones, polyunsaturated fatty acids, leptin, cholecystokinin and insulin and related hormones. These are discussed first in their physiological roles and then in terms of how they can be manipulated to increase production. The effects on appetite and feed conversion are at the forefront, as are the implications of loss of carcass quality — boar taint, porcine stress syndrome, pale soft exudative (PSE) meat and dark, firm and dry (DFD) meat.

The next short chapter covers the endocrine manipulation of milk, egg and wool production (defleecing). The physiology of the mammary gland at all stages of its activity — growth and development, the initiation and maintenance of milk production and involution — are all explored in reasonable detail. It is a pity that only cattle are considered since, in Europe, sheep and goats are also of