

623a Broom, D.M. 2009. Review of: *Understanding Animal Welfare*, D. Fraser, Wiley-Blackwell, Oxford, 2008. *Applied Animal Behaviour Science*, 119, 125-126.

David Fraser has written a stimulating and informative book on a subject of much current interest. The style of writing is easy to follow although some weighty issues are addressed. The book is mainly at post-graduate level, although an informed lay-person will appreciate much of it. Since it covers some sophisticated philosophy, some complex science and some erudite historical discourse, most readers will feel that they are lay-persons in respect of some of the content!

The first three of the thirteen chapters, and parts of several other chapters, concern the history of attitudes to animals. The material on attitudes is a review of published opinions published rather than the kind of quantitative data collection about attitudes that one might find in a journal like "Anthrozoös". After explaining some of the attitudes to animals of people from the Greeks to Bentham and some recent commentators, human origins are discussed with reference to various holy books and the traditional views of Ojibway and Innu peoples. A telling point is the view described of a Canadian farmer who on a particular day takes his old dog to the veterinary surgeon, ships some of his pigs to slaughter and sets leg-hold traps for a coyote. As Fraser says, "three animal species similar in level of mental functioning, capacity for suffering, and probably most other attributes which rationally might make animals worthy of moral concern" are treated very differently.

The book refers to Paul Thompson and others in explaining well how the attitudes to animals of people, in the past and now, are related to the background and philosophy of the individuals. Fraser explains that there is an agrarian and pastoral idyll and: "under the influence of agrarianism animals are not so much wards as fellow actors in the age-old drama of human life". Rural living is thought of as wholesome and the animals are assumed, often erroneously without adequate understanding of the motivation or welfare of those animals, to be willing partners. Another view is that described as romanticism: "Through the lens of romanticism people viewed animals as fellow beings, capable (like humans) of suffering." In a third view, "seen through the lens of industrialism, animals are cast in a role roughly analogous to workers in efficient production systems". Hence to pay attention to welfare is right for production reasons. The development of ideas then moves into the modern era via the writings of Ruth Harrison, Bill Russell, Bill Thorpe, through his work on the Brambell committee, and Peter Singer.

The scientific study of animal welfare and definitions of it are then introduced with reference to Hughes, Broom, Dawkins, Duncan, Moberg and Hurnik. It is helpful that the rather old-fashioned establishment view, stated even by Tinbergen, that feelings can't be scientifically discussed, is mentioned. In a constructive discussion of the role of feelings in welfare and their relevance to its definition, however, the key point that feelings are biological mechanisms and a part of the individual's attempts to cope with its environment could be explained more clearly. In the subsequent exposition of disease and injury in relation to welfare, it is made quite clear that the author considers that poor health is an important part of poor welfare. Amongst a useful collection of examples are an uncritical account of the Dawkins et al paper on broiler welfare and an explanation of the Canadian report on welfare problems resulting from the use of bovine somatotrophin without reference to the more detailed 1999 E.U.

report. A helpful chapter on stress and adrenal responses follows but Fraser stops short of saying what stress is and explains some of the criticisms of Selye's writings without explaining how much difficulty they have caused because of the ambiguity of Selye's use of the concept.

The chapter on abnormal behaviour will be helpful to most readers. Fraser explains what stereotypies, tail-biting etc. have been reported to indicate. The valuable work of Georgia Mason and Hanno Würbel is described and Fraser concludes that whenever animals show stereotypies, the environment of the animal is deficient. The discussion of the causation of stereotypies quotes the work of Terlouw et al demonstrating that stereotypies in sows were much more frequent if they received a restricted diet than if they were well fed. This shows that diet can increase the extent to which stereotypies are shown. It does not, however show that stereotypies in sows are largely caused by dietary restriction. Almost all commercially kept sows receive a restricted diet but stereotypy occurrence depends greatly on the living conditions. Many papers show that stereotypies occur much more in stalled or tethered sows than in group-housed sows.

Pain, fear, frustration and some forms of pleasure in non-human animals are discussed in a most informative chapter of this book. An equally valuable chapter explains, referring to recent complex literature, how preference tests can be used to provide information relevant to providing conditions likely to lead to good or poor welfare. Other chapters explain how welfare indicators may be combined and how the concept of values has been included, or avoided, by different authors when writing about animal welfare.

One of David Fraser's influential papers has been presented by some authors as stating that animal welfare definitions should include function, affect and naturalness. My interpretation of this paper is that Fraser described how people think about animal welfare in these three ways but did not state that welfare definitions should incorporate these three aspects. Having read this book, I believe that I interpreted Fraser's position correctly. He devotes a chapter to naturalness and refers to work by David Wood-Gush, Alex Stolba and others which emphasises that consideration of what is natural gives information about what animals need. Ultimately it is the needs of animals, with their dependence on biological functioning, which have to be taken into account when designing systems for keeping and caring for animals. Neither Fraser nor most other animal welfare scientists claim that the natural environment in total is necessary for animals to have good welfare. The link to what is "natural" is the understanding of animal's needs. The functioning of animals will be less good if needs are not met. This functioning difficulty will often include pain, frustration or some other negative affect and the health of the animal may be poorer. All of these are part of poor welfare. If needs are met, it is more likely that there will be good feelings, effective body regulation, absence of disease and hence good welfare.

All animal welfare scientists and those who wish to understand this complex subject better should read this book. David Fraser stands back from making some pronouncements about major issues in animal welfare. He leaves it to the informed reader to come to conclusions but he certainly makes all readers think carefully about the subject and he provides a wealth of information upon which to base that thinking.

Donald M. Broom, Centre for Animal Welfare and Anthrozoology, Department of Veterinary Medicine, University of Cambridge, Madingley Road, Cambridge CB3 0ES, UK.