

accept Kanzi's behaviour as linguistic because Kanzi is a non-human and therefore cannot use language.

The final chapter summarizes and extends the earlier arguments, calling for further study of apes in different conditions, and for a 'perspective shift' driven by Kanzi's accomplishments. There is also criticism of the notion of a human-specific 'Language Acquisition Device', with emphasis given to the fact that excellent linguistic abilities have been observed in bonobos reared from a young age in an enriched, linguistic environment in which humans have become 'socially significant'. In contrast, apes which have been exposed to arbitrary symbols for communicating only at a later age (for example, Kanzi's adoptive mother), or with experience of humans as merely 'significant' others, may not develop the degree of language competence observed in Kanzi. In other words, it would be impossible for Kanzi and his sister, Panbanisha to have developed in the way that they have if they had not been reared in intimate and meaningful contact with humans.

The book could be a useful acquisition for libraries and also for those with an interest in both old and ongoing debates over ape language projects. It is short on references, and much too unfairly dismissive of other work in animal psychology (for example, the final chapter states that language research is the *only* method available at present for gaining insight into the mental lives of animals!). From the point of view of animal welfare, ape language projects do raise a number of issues which may have been discussed in detail elsewhere but this reviewer can't easily recall where. No one could reasonably claim that Kanzi and Panbanisha are unhappy apes: they live varied and stimulating, if unnatural, lifestyles. The wild population of bonobos is small and dwindling. It may well be that captive populations, of which there are a small number scattered around the globe, will play an increasingly important role in terms of maintenance of a viable genetic stock of these apes. What role, then, for Kanzi? Is this prime adult male to contribute to this gene pool? Does he express any desire to mate? Is he capable of mating? Are there plans to produce offspring from Kanzi using artificial methods? What would be the future for any resulting offspring? There may be another interesting book, addressing the moral and welfare issues and taking in other projects of this type, waiting to be written.

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Farm Animal Well-Being: Stress Physiology, Animal Behavior and Environmental Design

S A Ewing, D C Lay Jr and E von Borell (1999). Prentice Hall Inc. 358pp. Hardback. Obtainable from the publishers, 1 Lake St, Upper Saddle River, New Jersey 07458, USA (ISBN 0136602002). Price £30.99/US\$50.99

This book comprises 357 pages divided into four main sections: Part I Animal Well-Being: The Ultimate Goal; Part II Stress: A Challenge to Well-Being; Part III Animal Behavior and Well-Being; and Part IV Designing the Animal's Environment. In addition, there is a glossary, references, suggested reading and index.

This book is very much written for North Americans. When I saw the title I wondered why anyone would use the term 'well-being' when we have the more commonly used and widely accepted term 'welfare'. The answer was revealed when a reliable source in North America informed me that many North American ethologists shy away from the word 'welfare' because it conjures up visions of people receiving government financial support.

The authors of the book say that the terms well-being and welfare are used synonymously, but then proceed to avoid the term welfare wherever possible. When the word welfare is used it is italicized to illustrate a direct quote, although I did find a few cases where it had evidently slipped through the net and appeared unitalicized (pp 83, 104). I found it annoying that the avoidance of the word welfare was carried to the extreme of it being absent from both glossary and index.

The main title of the book is, actually, rather misleading since there is very little on farm animal well-being in this book. The sub-title is a more accurate description. This book is about stress, behaviour and environmental design for farm animals, and the links between these aspects and animal welfare are, for the most part, poorly developed and illustrated. Indeed, I found the one-and-only chapter that attempts to deal with animal welfare to be a barely comprehensible mish-mash of ideas, with no clear flow or direction. Furthermore, the final section (Part IV) places considerable emphasis on environmental design and management for productivity, even to the extent that animal welfare is neglected. As examples: mention is made of a system for changing the time of lambing that involves maintaining the animals in total darkness for extended periods, but no mention is made of the effects on welfare (p 226); the welfare aspects of veal calf production systems are largely ignored (pp 237–239, 288); it is stated that ‘metabolic disorders are common in dairy cattle’ (p 290), yet the welfare implications are not discussed; the section on animal handling concentrates very much on the implications for human safety (pp 198–202); it is stated that frostbite of the scrotum may cause tissue damage that impacts on reproduction, but effects on welfare are not mentioned (p 212). There are many more such examples in the chapter on designing the social environment of animals.

In the chapter that attempts to deal with the issue of animal welfare, some concepts tend to be over-simplified to the point that the information is misleading or even incorrect. For example, preference studies do not allow us to measure how an animal feels about its surroundings (p 12), rather they merely tell us the choice an animal makes at a particular time from a limited selection of alternatives. If any technique tells us how animals feel about their surroundings it is operant conditioning. Contrary to the statement on p 15, the development of acute or chronic stress does not necessarily lead to abnormal behaviour and abnormal behaviour does not necessarily impact on the efficiency of performance. For example, rangeland cattle grazing phosphorus-deficient pasture (ie are suffering ‘nutritional stress’) may chew bones. This behaviour may be regarded as abnormal or aberrant, but it is adaptive in that it can provide the animals with phosphorus, a lack of which results in the development of fragile bones, which may lead to injury and death. Indeed, even the authors state later (p 313) that the performance of stereotypies, which one assumes would be classed as aberrant behaviours, is not necessarily detrimental to performance.

Part II is a very comprehensive, logical and easy to follow account of stress. The text is broken-up with some useful diagrams and figures. I found the sections on the organisation of the nervous system and its role in the stress response to be particularly useful. However, the relationship between stress and welfare was inadequately developed. I wonder if this resulted from the ways in which the term stress was defined and used. The various definitions provided (eg pp 23, 27, 331) fail to distinguish normal, homeostatic responses from responses that have detrimental effects on the animal. Indeed, in Chapter 1 it is stated that ‘*life without stress is not possible*’ (p 20), but that depends upon the definition of stress.

The section on behaviour is again very comprehensive and illustrated with some informative photographs and diagrams, but again misses the links with welfare. I also have

concerns that the authors have tended to paint a black and white picture about some behavioural concepts when there are, in fact, alternative hypotheses that fit the facts. For example, in relation to social grouping and relationships, the authors suggest that individual recognition is a prerequisite for dominance relationships when, in fact, such relationships could be developed through the assessment of physical attributes. I challenge the definition of dominance; it is most definitely not an individual characteristic, but is an aspect of a relationship between two or more individuals. I strongly disagree that cattle temperament (p 144) and tail-biting in pigs (p 145) are 'aggression'. Evidently the authors themselves have some doubts about tail-biting as several pages later (p 155) it is stated to be associated with exploration. I also challenge the statement that tonic immobility is an 'aberrant behavior associated with environmental inadequacies' (Figure 5.28). Indeed, this statement is inconsistent with the definition of tonic immobility given in the glossary: 'a behavior ... that is normally the result of a stimulus such as fear of a predator'. I would also say that fear is not a stimulus but, rather, the response to the predator, which is the stimulus!

Throughout the book the authors appear to be particularly entranced with what is referred to as 'aberrant behaviour'. This is given the definition of 'deviation from the usual', which begs the question 'what is usual?'. This apparent obsession with aberrant behaviour is evidenced by there being 18 pages, much of which is a series of photographs and tables, devoted to this topic and reference to no less than about 75 pages in the index. There is no concession to the fact that in some cases 'deviation from the usual' may actually be adaptive and may not impact negatively on welfare.

Part IV is long and rather tedious, Chapters 6 and 7 being full of tables summarizing aspects of environmental requirements for the major livestock species, such as spatial, thermal and nutritional. It is useful to have all of this information together in one publication and these Tables will be of significant use to those who wish to know about designing environments for good livestock productivity but, as stated above, there is next-to-nothing on animal welfare in these chapters. The reader is left to assume that if one does all the things detailed in these chapters then stress will be minimized and good welfare assured. However, this is never explicitly stated.

Throughout the book I found the in-text referencing to be frustratingly inadequate. The authors make many statements, some of which are controversial and debatable, that are not referenced. In other instances referencing is selective and supports only one side of a debatable point. For example, it is stated that stereotypes allow the animal to cope with aversive environmental circumstances (p 178) and Dantzer and Mittleman (1993) is cited, yet there are other authors who dispute this (eg see Lawrence and Rushen [1993]).

A bias to the North American reader is demonstrated throughout the book. For example the history of concerns about animal welfare and the legislation protecting animals (pp 7–10) is almost entirely based on what has taken place in the United States. I came across a number of terms with which I was totally unfamiliar and could only conclude that they are peculiar to North America. Examples are 'ranting' by confined sows (p 117), male animals 'settling' females (pp 158, 242), 'lambing jugs' (Table 6.20), and 'envelope' in relation to the environment (p 205). There are many abbreviations and acronyms, such as SVCAWS, EBW, CDGAA, NRC, cfm, NPPC and MWPS, particularly in Part IV, that may have meaning for North Americans, but many are not explained when they are first used and the reader frequently has to read several more pages before discovering what the letters stand for.

There's some quirky phrasing, too, that I found to be distracting, such as 'chickens do not have earlobes but have well-developed ears' (p 140); in relation to competition for food,

animals have 'abusive competitors' (p 176); 'animal interactions ... may have characteristic purposes such as ... spite ...' (p 126); and the suggestion that 'individuals ... may be influenced by a controller that signals approval by following the leader' (p 127). These latter statements smack of anthropomorphism, which is at odds with the criticism of an anthropomorphic view of judging an animal's condition (p 89). To my amazement, the reader is also given instructions on which buttons to press on a calculator to calculate metabolic body size (p 270)!

For me, one of the most annoying aspects of this book was the jumble of units of measure used. Even within a sentence, paragraph or table the authors switch between metric and Imperial. I know that the North Americans (and British) still cling to the Imperial system for many of their measurements, but the authors should have made the effort to standardize the units. Further, if they had any intention that this would be an international book then they should have used the 'Système Internationale' system and provided measures in Imperial units in brackets. This is not simply pedantry; consider the use of the 'gallon'. Which gallon is this, the American or the British?

This is definitely not a book to be read from cover to cover; there is too much repetition for that (how many times did I read about poultry workers knocking on building doors before entry?) and in many parts the style, sentence construction and grammar do not make for easy or enjoyable reading. Having said that, the chapters on stress are informative and well written. Part IV will be of considerable interest if readers are considering setting up in animal production, providing they are prepared to grapple with the muddle of units of measure. The chapters on behaviour are well worth a read, but need to be treated with some caution; there are other valid interpretations to those presented here. If, on the other hand and as stated in Part I of this book, animal well-being is the ultimate goal, then this book has gone wide of the mark.

Reference

Lawrence A B and Rushen J 1993 *Stereotypic Animal Behaviour: Fundamentals and Applications to Welfare*. CAB International: Wallingford, UK. 212pp

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Animal Management in Disasters

S E Heath (1999). Mosby: London, UK. 320pp. Paperback. Obtainable from the publishers, 24-28 Oval Rd, London NW1 7DX (ISBN 1556644191). Price £26.50/US\$39.95.

Disasters can be 'natural' such as hurricanes, volcanic eruptions, floods, earthquakes, fire and extremes of temperature or they can be 'man-made' from nuclear accidents, bioterrorism, war, civil unrest and ethnic cleansing. Recent examples of 'man-made' disasters have occurred in Chernobyl, the Gulf War, Afghanistan, Rwanda, Croatia, Bosnia and Kosovo.

Dr Sebastian Heath, the author of *Animal Management in Disasters*, is an assistant professor at the School of Veterinary Medicine, West Lafayette, Indiana and despite his academic background, has been personally involved in a number of natural disasters which have occurred in the United States.

From his experience he describes four phases for effective disaster reduction:

Mitigation is the construction of structural features and implementation of policies to reduce the impact of disasters before they occur.

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Mitigation is the construction of structural features and implementation of policies to reduce the impact of disasters before they occur.

Preparedness occurs through planning, public education and safety advisories in the face of pending disaster such as awareness campaigns.

Response and Recovery are the two post-disaster phases. **Response** usually occurs in the first few hours or days after the disaster and involves the rescue of animals and treatment of injuries. Dr Heath believes '*that the response is most effective when carried out by persons and groups that deal with the same issues in their regular work ie local veterinary practices and animal shelters.*' **Recovery** starts as soon as actions are taken to restore the community's social and infra structure.

Sadly, the response to some unforeseen international disasters, especially in the Third World, like the recent cyclone in Eastern India, is fraught with practical problems including difficulties of access to reach remote areas, a lack of local infrastructure, impossible logistics and poverty of the people.

The principal responsibility of the Government is to promote public health and safety through emergency management. The care of the animal is therefore relegated in official importance unless it impinges on public health.

Whilst the saving of human life has to take first priority in a disaster situation, animal welfare associated with the human-animal bond must be taken into account, as well as the economic damage following loss of livestock.

Dr Heath defines animal welfare as '*a human responsibility that encompassed all aspects of animal well-being, including proper housing, management, nutrition, disease prevention and treatment, responsible care, humane handling and, when necessary, humane euthanasia.*'

He is rightly dismissive of the actions of animals rights groups who may use disasters to further their own agenda. There is a cynical view that some animal rights workers go to the disaster, look for the photo opportunity to be seen saving animals, and then go back home to raise funds on the back of a publicity campaign.

Also, beware the charlatans who seek to benefit from the disaster. At the start of the Balkan war, when Serbia invaded Croatia, a well spoken Croatian businessman came over to the UK and obtained donations, medical and veterinary supplies from gullible charities – all of which were later sold for his personal gain.

On the other hand, one must recognize the important role that the more professional animal welfare groups such as WSPA have played in international disasters where, working alongside the United Nations, the military, official Government agencies and other NGO's, they have organised the provision of emergency services, food for starving animals and the supply of veterinary drugs.

One chapter of the book is devoted to the many myths and realities related to animals in disasters. These home truths are intended to steer the reader away from misleading paths which may distract from the development of effective emergency management programmes. Dr Heath recommends that veterinarians should have training to become more proficient in the practice of disaster veterinary medicine.

This book is well written and is the first publication to set out the basics of veterinary disaster management. It is an essential buy for any veterinarian or animal welfare worker associated with disaster relief at both a local and international level.

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