

Book Reviews

Welfare of Pigs: From Birth to Slaughter

Edited by L Faucitano and AL Schaefer (2008). Published by Wageningen Academic Publishers, PO Box 220, 6700 AE Wageningen, The Netherlands. 316 pp Hardback (ISBN 978-90-8686-066-1). Price €85, US\$127.

The stated objective of this book is “to provide a science-based reference text covering all aspects of swine production”. Furthermore, it aims to provide an understanding of how management decisions impact on animals and how a balance between welfare conflicts can be struck within farmed environments. In these objectives it succeeds admirably, giving a valuable reference work with comprehensive coverage of the subject.

The book comprises 11 chapters, each written by an individual or team currently active in research in the subject area they review. The authors have wide international representation, being drawn from different countries in Europe, North America and Australasia, and thus give a broadly-based perspective on the science and issues. The chapters range from those covering general concepts relating to welfare science, through overarching disciplines affecting swine welfare at all stages, to detailed consideration of the welfare issues in individual production stages. All chapters are up-to-date, give good coverage of their subject and provide a useful listing of key scientific references for those wishing to pursue more detailed study.

The opening chapter introduces general welfare concepts and terminology, discussing the inter-relationships between welfare, affective state and biological function, and emphasising positive as well as negative welfare considerations. This is followed by a chapter on general assessment methodologies, including stress physiology, behaviour and their interactions with production and pathology. It contains a particularly useful discussion of physiological measures of acute and chronic stress, and the way in which these may be confounded by normal metabolic homeostasis. The next three chapters deal with specific production stages of the sow, the piglet and the fattening pig. The first two of these use the structure of the ‘Five Freedoms’ to discuss welfare challenges. This works well for the sow, where the major issues of chronic hunger, confinement and social competition in the pregnant sow fit well within this framework. However, it gives more organisational difficulties for discussing welfare issues of the piglet, where the freedoms intermesh in topics such as neonatal survival and weaning. The splitting of the chapters in this way also makes it more difficult to deal in an integrated way with issues which overlap different production stages. These include subjects such as the farrowing crate, where sow and piglet welfare conflicts arise, and developmental issues such as effects of prenatal stress of sows on their progeny, or effects of pre-weaning experience of piglets on post-weaning outcomes. Whilst, in general, the chapters complement rather than duplicate each other, this has

provided some difficulties. The chapter on fattening pigs, whilst reading well as a stand-alone chapter, contains significant duplication with other chapters in the book regarding weaning stress, genetics, human/animal interactions and meat quality. In contrast, other important areas such as space requirement, social grouping, and injurious behaviours receive relatively scant mention.

Emphasising the need to encompass the whole lifetime experience of the pig when discussing its welfare, the next three chapters deal with the post-farm issues of transport, pre-slaughter management and the slaughter process. It is good to see a comprehensive coverage of issues not often mentioned. For example, the transport chapter includes information on weaned piglets and cull breeding stock as well as slaughter pigs, and the chapter on pre-slaughter management makes the important link between issues on-farm with those in lairage in the determination of pre-slaughter stress. The slaughter chapter, whilst dealing with the major issues of electric, gas and percussive stunning, and briefly mentioning mass killing in disease outbreaks, could have usefully also addressed the neglected issue of humane euthanasia, on-farm.

The next two chapters deal with the generic issues of breeding and human/animal interactions. The chapter on breeding gives a particularly good synthesis, covering both the traditional and newer genetic approaches. Explanation of the application of basic genetic principles and technologies in pig production is combined with review of the current state of knowledge in the rapidly developing field of genetic approaches to improving health and behavioural traits affecting welfare. The chapter on human/animal interactions discusses both the impact of human behaviour on the animal, and also the methods of personnel management which can be adopted to optimise this by appropriate selection, management and training of staff. The final chapter rounds off the book nicely by standing back from the detailed debate on individual issues to consider the societal and ethical context within which scientific and practical results must be placed.

Overall, this book provides both a readable overview of welfare issues in pig production for the generalist, and a valuable reference work for the specialist. As such, it can be recommended to academics, students, and those working for either animal welfare or industry organisations.

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Guilty Robots, Happy Dogs: The Question of Alien Minds

D McFarland (2008). Published by Oxford University Press, Great Clarendon Street, Oxford OX2 6DP, UK. 256 pp Hardback (ISBN: 978-0-19-921929-2). Price £16.99.

In the preface to this book, David McFarland sets the scene starkly; “To understand the mind of an animal, if it has one

at all, we would have to understand an alien mind". This book is an exploration of the deductive investigative methods that could be used to infer something about alien minds from observations of their behaviour. The premise of the book, foretold by the title, is that the same methods can be applied to explore the possibility of mind in alien, biological agents (animals) and alien, non-biological agents (robots). This line of thought is pursued throughout the book by comparing the behaviour of the author's own terrier, Border, with that of goal-directed robots such as 'slugbot', an energy autonomous machine powered by the slugs that it captures and processes in a digester-station, and other imaginary robots designed to act as traffic controllers or security guards. Parallels in the design process of animals and robots are explored. Dogs have evolved patterns and suites of behaviours through the processes of natural selection and, more recently, human whim. McFarland argues that robots are subject to similar selection pressures so that they survive or not, within a competitive market. By the end of the third chapter the reader should be convinced that it is possible to design a robot which exhibits complex behaviour, and also that it is perfectly possible to account for most types of complex behaviour in terms that require no recourse to mentalistic interpretation.

So far, so familiar, to readers who are conversant with the field of animal cognition. But the book seems to promise more. It teases with cliff-hanger endings to each chapter ("on the other hand... I can suppose that the dog might have brain states that are identifiable as beliefs") and exciting new chapter headings ('Beyond Automata', 'Mental Possibilities', 'The Feeling of Being') suggesting that there may be some other, elusive but special, types of behaviour that will allow us to infer that dogs (or robots) do possess minds. By chapter 4, the crucial question of whether animals or robots can make use of explicit knowledge is raised. Do animals or robots have beliefs or are they following procedural rules? This tantalising section of the book discusses the famous devaluation experiments of Anthony Dickinson, where rats are unwilling to work for a food reward that has become devalued in a separate context (Dickinson & Dawson 1989; Dickinson & Balleine 1994). These results have proved difficult to explain in procedural terms, leading Dickinson and his many followers to suggest that the rats in these experiments are accessing and using explicit (declarative) knowledge. For those interested in animal cognition, Dickinson's experiments have been held up as something of a talisman against the onslaught of behaviourism, as proof, even, that animals are not just automata, that they have minds and beliefs and that they can make logical decisions by accessing their own knowledge about events. For an audience sympathetic to this view, the figures presented on page 85, which reveal very similar outcome-devaluation behaviour in robots, will come as something of a shock. McFarland states baldly that outcome-devaluation can be demonstrated in a robot using purely procedural learning. The design features of the robots that can do this are not given in the present volume

but two key references are listed in the Endnotes section at the end for those who wish to pursue and evaluate, in more depth, this potentially deflating claim.

In chapters 5 and 6, McFarland outlines classic work on theory of mind, teaching, deception, imitation, co-operation and tool-use, but warns that demonstrations of such capacities permit us only to 'attribute' mental states to animals, ie they make it easy for us to describe the animal behaving *as if* it had a theory of mind. He is adamant that such evidence does not allow us to 'ascribe' mental states. Ascription would require us to have good reasons for our attributions, which are currently lacking. The book progresses with discussions of subjective experience, awareness, and whether, or how, mental events could in themselves be causal. Here, I would have liked more exploration of the importance (if any) of biology in relation to the possibility of subjective experience (should animals and robots really be considered equal candidates for the possession of consciousness, given that humans are conscious biological animals?) but otherwise this is a fine summary of the main strands of current thinking. Slightly disappointingly, although not unexpectedly, it becomes increasingly clear that we are not in for some striking new insights into these difficult areas. Despite the chapter headings that seem to be progressing towards some final showdown of authoritative disclosure, in the end it is safe to say that all is *not* revealed. It would be bad form to give away the ending to any book, but anyone thinking of buying this volume should do so for the right reasons and not because they expect a definitive answer to the question of animal mind.

On the plus side, the right reasons to read the book are many. The volume is succinct, and mostly easy to read. It can slip rather precariously from incredibly reader-friendly passages about Border's behavioural idiosyncrasies, to some rather dense science, but it always slips back again, and important points are reiterated and explored more than once. For an animal scientist, the insight into the field of robotics is fascinating in its own right, particularly the parallel debates taking place about whether machines could be designed to have phenomenological consciousness. The real joy of the book is the easy way in which McFarland travels between the different disciplines of animal behaviour, experimental psychology, philosophy and robotics, presenting an overview of key concepts, with differing terminologies tamed by a very useful glossary section at the back. I would recommend the book to anyone seeking an interest in animal cognition or animal consciousness.

References

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