

anecdotes, science humour, and examples from popular science fiction films and literature to enrich the examples being given. All this helps to make it easy to engage with for a non-specialist audience; it would, for example, make a highly accessible, light text to precede an animal behaviour or animal welfare undergraduate lecture series.

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Animal Ethics in Animal Research

H Röcklinsberg, M Gjerris and IAS Olsson (2017). Published by Cambridge University Press, Shaftesbury Road, Cambridge CB2 8BS, UK. 185 pages Paperback (ISBN: 978-1-108-43068-5). Price £27.99, Hardback (ISBN: 978-1-108-42061-7). Price £78.99.

This short easy-to-read book is aimed at technicians, students, researchers, veterinarians, teachers, members of ethics committees and policy-makers. It is meant to be a 'quick read' covering a considerable amount of ground at an accessible level, and each chapter is intended to be a stand-alone text with questions for reflection and discussion at the end of each chapter. The seven chapters address different aspects of animal use in research.

Chapter 1 introduces some of the ethical issues and arguments, including, the need for researcher integrity (referring principally to misconduct and fraud) with relevant examples provided in Table 1.1. The consideration of animal welfare, and some of the ethical challenges that research introduces, are summarised from a practical viewpoint. The role of animal ethics committees in raising awareness but including their limitations are also introduced. (Ethics committees are sometimes referred to as ethical committees — but I would hope that all ethics committees [EC] behave ethically). The authors examine the tension between animal welfare and data validity and the varying approaches of ECs, the tension between patient interests and animal interests, and the need for empathy and understanding of welfare. The authors point out the difficulties in balancing what is necessary to do to animals in research against the instrumental use of sentient animals.

Chapter 2 introduces some of the ethical issues and ethical theories that are commonly used in analysing animal research and provides a brief but reasonably comprehensive gallop

through Contractarianism, Utilitarianism, Deontology, Virtue ethics, and Feminist ethics. They emphasise that usually a mixture of approaches is used.

The next chapter (3) deals with the Three Rs and their application to how animals are used, what harms can occur, harm assessment, and harm avoidance. They mention housing in the context of a Welfare Quality® approach to assessment. They perhaps overplay positive experiences of animals (eg rearing), and interestingly, as a passing comment, the possible interaction between the types of procedures and the personality of animals. Each R is dealt with and a table of severity categorisation and examples provides the reader with a practical idea of what is involved. There is a section on the biological differences between species and its importance in extrapolating research results to humans. No mention is made of zoomorphism or critical anthropomorphism but only the translation of animal data to humans, which is understandable as that, after all, is the main focus of much research. They point out that systematic reviews show that the use of HEPs could be better incorporated into research protocols.

Chapter 4 then applies ethical thinking and its relevance in society. Table 4.1 sets out several examples of social relevance, what is done to what animals, what harms might be caused and the predicted severity classification. The ensuing discussion focuses on the possible application of different ethical theories though it might have been helpful to separate feminist and virtue ethics more. Some key points follow on assessing potential benefit (or social relevance), on the uncertainty of achieving that aim, and how to measure it. They suggest analysing benefit at three levels: societal context or background to the research; final aim of the research; and direct aim of the research.

Chapter 5 is completely different. It is a tour de force covering the laws worldwide and provides a useful overview on how legislation is regulated and implemented in practice, along with accompanying guidelines in various countries. It starts with some history, then concentrates on EU laws but surprisingly does not mention the Council of Europe's Conventions which are slightly different from the European Union's animal directives, and the scope and goals of the two European legislations are slightly different (harmonisation vs standardisation). The Australian guidelines are particularly well developed and deserved a greater mention. Of particular interest is the effort that scientists themselves have made towards self-regulation in the production of their own guidelines (Section 5.5) emphasising the importance of 'ethical discernment' and 'collective ethical reflection' in order to ensure awareness of their ethical responsibility for the direct and indirect consequences of their research. Table 5.2 sets out the various specific areas where guidelines have been produced, as well as a commentary on the areas covered.

Chapter 6 is about how and why the public are involved. This chapter highlights the increasing concern for animal welfare in the 1960s due to the rise in intensive farming methods and in animal research which led in various ways to increasing public involvement. The authors maintain that

the level of interest in the public is still relatively low, but that various pressure groups have heightened public concern which has led to a greater public participation. The authors have given a good synopsis of the ways in which public views are canvassed (Table 6.1). They perhaps overlook the influence that individuals can have on policy (eg Ruth Harrison's book *Animal Machines*, Rachel Carson on the use of chemicals, Henry Spira and Avon against cosmetics testing on animals in the USA in the 1960s and 1970s, Richard Ryder in 1970 coining the word 'speciesism' giving a greater insight into the philosophical debate, Clive Hollands in 'Putting animals into Politics' in the late 1970s in the UK). More recently, activities of the animal protection groups have led in Europe to a 'Citizens' Initiative' that in effect forced the European Commission to take some legal action on animal research.

The authors point out that the public are inevitably involved as, in one way or another, they fund the animal research. Given the constantly developing use of computer technology and other biological, medical and technological advances in their name, the public have a moral right to some input.

The roles of animal ethics committees in bridging science and society is discussed in relation to justification of research work, and the balancing of harms and benefits when there is not an animal replacement alternative. They look at the involvement of lay persons on ethics committees. One of the earliest studies on this topic was in the USA by Barbara Orlans, that showed that lay persons on IACUCs became even more permissive than the scientists, as well as being deferential to science. A lay opinion can provide a valuable independent input, and this is elaborated and can reflect the variety of people's attitudes towards animals and animal research in society. Nevertheless, they point to several criticisms of ethics committees. ECs do not consider ethics only the Three Rs, and so the broader moral issues are not discussed, rather these have been subsumed at an earlier stage, eg national laws, obtaining funding and other forms of approval. The harm-benefit judgement causes particular difficulty for ECs as there is not a set methodology and there is disagreement between ethics committees (which, by the way, this reviewer would see as a healthy way to go). An insoluble problem may be the impossibility of obtaining a representative 'lay person/community member' simply because of the diversity of views in society. The authors of this chapter leave us with the question of whether Animal Research Ethics Committees can ever meet public expectations.

The final Chapter (7) on the 'Future of animal research' discusses some of the technical and ethical developments likely to occur. These are discussed in terms of new refinements (in animal housing, and the withholding of analgesics dilemma in some areas of research because of unwanted side-effects). The last point is further discussed suggesting that a solution may be to develop a genetically engineered mouse not to feel pain! New replacements are examined, such as more complex cell cultures, organ-on-a-chip gene arrays, *in silico* (computer-based) developments, the economic advantages that come with not using animals. The

author notes that the resistance to the development of replacement alternatives is often through a desire for human safety that overestimates the value of animal experiments. The author rightly discusses validation as an obstacle but could have pointed out that validation against an imperfect model will not assure any greater safety for humans, only perhaps in different areas. The use of alternatives in education is briefly introduced with the use of mannequins and computer-based learning models but it raises the issue of whether veterinary students can gain sufficient confidence when actually working with client-owned living animals for the first time. Cloning and genetic alterations are reasons given for a predicted increase in the number of animals used in research. The ethical issues raised in this chapter mention a possible decrease in animal welfare against an increase in benefits, and that the rise in validated replacements and their development will fuel the anti-vivisection supporters. Mention is made of the increasing public concern for a broader range of companion animals than simply dogs, cats, and equids as rodents and other more non-traditional species are adopted as pets, some of which are still regarded as pests. Nevertheless, as the demand for better medical treatments and the goals of medicine change (longer healthy lives), so the use of animals will play an increasing role.

Overall, the authors should be congratulated on having achieved their aim of providing a relatively quick read into many of the current ethical issues in animal research whilst not allowing themselves to become bogged down in detailed debates. This may lead some readers to frustration but for many it will be a useful introduction to the field.

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Animal Welfare in a Changing World

Edited by A Butterworth (2018). Published by CABI, Nosworthy Way, Wallingford, Oxon OX10 8DE, UK. 292 pages Hardback (ISBN: 978-1-78639-245-9). Price €110; Paperback (ISBN: 978-1-78639-246-6). Price €60.

I am writing this review after a thorough reading of the first eight chapters and having skimmed through the remaining two-thirds of the book. This may be an unconventional way of opening a book review, but it is an important fact. For reasons of transparency, obviously, but above all because this fact reveals something relevant about the book. This is a book which merits detailed and dedicated reading, but that reading takes time. It takes time to digest the information intellectually but also emotionally. The first third of the book confronted me with the impact on animals of human destruction of habitats, the devastating effect of fishing gear as well as PCB pollution on ocean-living mammals, the extent and practice of trophy hunting, and the population collapse of vultures. None of these topics were more than superficially

familiar to me and understanding the extent of their inherent animal welfare challenges was fairly overwhelming.

The book continues with additional chapters on wildlife; intensification of agriculture; public opinion and retailers as driving forces in animal welfare; invertebrate and fish sentience; animal welfare at slaughter; precision livestock farming; dogs in society; the animal's experience of domestication; the concept of a life worth living and the welfare impact of death; anthropomorphism; welfare issues in hunting; tourism and animal welfare; inclusive approaches to change and animal welfare in the face of shrinking public resource. Simply typing the topics out makes me slightly out of breath! And therein lies both the strength (predominantly) and the weakness (much less significantly) of the book.

In assembling this book (in itself an impressive endeavour involving 42 authors of diverse backgrounds contributing 26 chapters), Andy Butterworth had as an overall aim to discuss issues of when animals' welfare is influenced by human-induced change. But the secondary guiding principle is also very evident: to invite authors who are individual thinkers and give them freedom to write in their own way. This can be risky, but overall it has worked out well in this case: the writing is generally engaging as well as authoritative. I would have wished for more references in some of the chapters. But that is me writing as a scientist, it is plausible that, for example, a non-academic practitioner would disagree, and this book is for both of us.

The downside of this approach is that the book is an assembly of individual chapters in a (seemingly) arbitrary order from 1 to 26. The topic of human-induced change impacting animal welfare is so broad that an attempt to provide some thematic organisation would have been very welcome. That may also have helped to identify a couple of missing topics: there is nothing about animal use in research (unfortunately, because that would have added an example of a largely positive development in how animals are treated) and there is very little about how animals are affected by the increasing demand for animal products in emerging economies.

That said, these are deviations from the ideal book on the topic. The book that Andy Butterworth has put together is still a very good book and definitely worth buying and reading. From my perspective as an animal welfare scientist working with farm, laboratory, and companion animals, the book opens doors to a number of different domains of animal use with which I am unfamiliar. I think this will also be the case for many of the readers of this journal.

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