

Book Reviews

The Costs and Benefits of Animal Experiments

A Knight (2011). Published by Palgrave Macmillan, Basingstoke, Herts RG21 6XS, UK. 254 pages Hardback (ISBN 978-0-230-24392-7). Price £55.00.

For at least two hundred years, strong emotions have fuelled public debate on the use of animals in biomedical research. Its defenders have passionately urged its many real and potential benefits to the prevention and relief of human and animal suffering, its opponents, no less passionately, the costs and harms that research animals suffer for what in the end is mostly human and only occasionally animal benefit. That this use of animals is unethical in principle has been argued by deontological advocates of animal rights, and that it may be unethical in practice has been argued by utilitarian advocates of animal welfare. In political terms, the deontological arguments probably have been most influential in relation to regulatory restrictions on the use especially of Great Apes but to some extent also of primates generally: after Darwin it is difficult to confidently deny duties to (even if not the rights of) our nearest cousins. Primates (and to some extent companion animals) apart, however, the morality of using animals in research has been most commonly contested in terms of utilitarian arguments about weighing the costs or harms to the animals against the potential or expected benefits of the research. This has been politically accepted as an appropriate basis for deciding which projects and procedures may or may not be approved under both the UK 1986 Animals (Scientific Procedures) Act, and now the Directive 2010/6/EU on the protection of animals used for scientific purposes.

Political agreement to this regulatory utilitarian calculus, however, has not silenced the public critics or for that matter the public defenders of animal use in research; and although various attempts have been made to seek evidence-based moral consensus on the ethical issues involved, this has proved elusive. When possibly in danger of having to admit that their opponents might have a point, critics and defenders alike have often tended to shift the focus of debate onto their own cherry-picked examples of undeniable harms to animals or undeniable benefits to humans (or other animals); and since these critics and defenders are commonly better briefed than their opponents on the evidence for, and the technical complexities of their chosen examples, the quest for consensus can be stalled. On the other hand, when critics and defenders can be persuaded to engage with one another sufficiently to examine critically the evidence and arguments related to the nature of particular costs or benefits across a range of relevant examples, a degree of consensus on practical matters is sometimes possible. Examples of this can be seen in the historical growth of consensus on the one hand against the use of animals in cosmetic testing, and on the other in favour of institutionalising the search for innovative ways of implementing the Three Rs.

It is in this general context of seeking practical consensus that Andrew Knight's new book on the costs and benefits of animal experiments is to be greatly welcomed. Knight is a veterinarian and fellow of the Oxford Centre for Animal Ethics, with an impressive record of research publications, especially on the utility of animal models for human clinical and toxicological research and on the effectiveness of non-animal models in those contexts and in that of veterinary education. Three of the central and most valuable chapters of the book under review provide much highly detailed, carefully researched and meticulously referenced information about how and why "large numbers of animal experiments selected without bias do not support [the] assumption... that laboratory animal models are reasonably predictive of human outcomes... in the safety and efficacy testing of drugs and other clinical interventions", or "generally beneficial in the... assessment of human toxicity" (p 91). The reasons for this, Knight argues, "include limitations of the animal models used and the poor methodological quality and statistical design of many animal experiments". Two further chapters, equally well researched and referenced, argue with a wealth of technical detail that a "broad range of investigative tools exist with the potential to replace much animal use in biomedical research and toxicity testing" (p 122).

Some of Knight's arguments against the human applicability of animal models are not uncontroversial: he makes much of the relevance of citation rates, which in the examples he provides are often poor or non-existent, but which he readily agrees "are not a definitive indication of utility or lack thereof" (p 48). Or, again, in criticism of the utility of pre-clinical animal testing, Knight's argument that "adverse drug reactions detected after drugs have been approved for clinical use remain common" (p 40) needs to be weighed against the no less evidence-based observation that since adverse drug reactions have a variety of causes of which many are avoidable, "claims that animal research is failing to protect people from adverse drug reactions need to be treated with some caution" (Nuffield Council on Bioethics 2005: *The Ethics of Research Involving Animals* 8.39).

More generally, also, it is difficult to escape the impression that Knight is inclined to judge existing animal models against higher technical standards than for new non-animal methodologies. Many alternative methodologies may yet be at too early a stage of development for scientists and regulators to concede his claim that all existing animal-based models should be 'discarded' if they cannot be 'formally validated' to the high standards he prescribes (p 191). This is not least the case because the standards Knight prescribes are not only technical but also ethical, and that for him 'the correct ethical balance' requires that animal experimentation should be limited "to non-invasive observational, behavioural, or psychological studies of free-living or sanctuary populations" — a proposal which he freely admits "would inevitably restrict the range of scientific questions that could be investigated" (p 193).

Knight's more controversial claims, however, should not be used as an excuse for ignoring the wealth of carefully researched, detailed criticism and advocacy to be found in his five central chapters on 'Human benefits' and 'Alternative strategies'. Existing animal models and methodologies are not perfect, and for those who are not yet prepared to discard them, Knight's evidence-based criticisms are a challenge to find ways of making them at least less imperfect, and a similar challenge is posed by what he writes about alternative strategies. A useful thought for anyone involved in research with animals when approaching these chapters, might be not that Knight's advocacy of the best is the enemy of the good, but that his practical insights may help them raise their own standards of what, in an imperfect world, is 'good enough'.

The five central chapters of Knight's book are bracketed at the beginning by three of introduction, which include a variety of useful statistics and information about types of animal use. These three chapters are collectively headed 'Animal costs' and there is perhaps less in them that is new than in the chapters already discussed. Much of what Knight writes about the harmful impacts of animal sourcing, housing and environment, routine and invasive procedures, and the special case of chimpanzees, will already be familiar to animal welfarists, and more of this than the text perhaps suggests is being

constructively addressed by progressive regulation and the ethical review processes of many research establishments. This is also the case with a number of the practical suggestions which Knight makes in his final two chapters on 'Conclusions and policy recommendations': while the book is addressed not only to a UK audience, in the UK his recommendation of a national centre for alternatives has already been met, and the requirement for retrospective evaluation very soon will be.

The remaining two chapters, sandwiched between the five central ones and the concluding two, are on 'Educational animal use and student impacts'. Informed by a variety of research studies in veterinary education and also by the author's experience as a veterinary student in 1990's Australia, they make a plea for the benefits to animals as well as budding veterinarians of 'humane teaching methods'. While there is much in these chapters about animal use that again will be familiar to animal welfarists, and some albeit occasionally *ad hominem* remarks about faculty resistance to change that may not be entirely unfamiliar to others in the higher education sector, further review of these chapters might more usefully be left to the veterinary education journals.

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