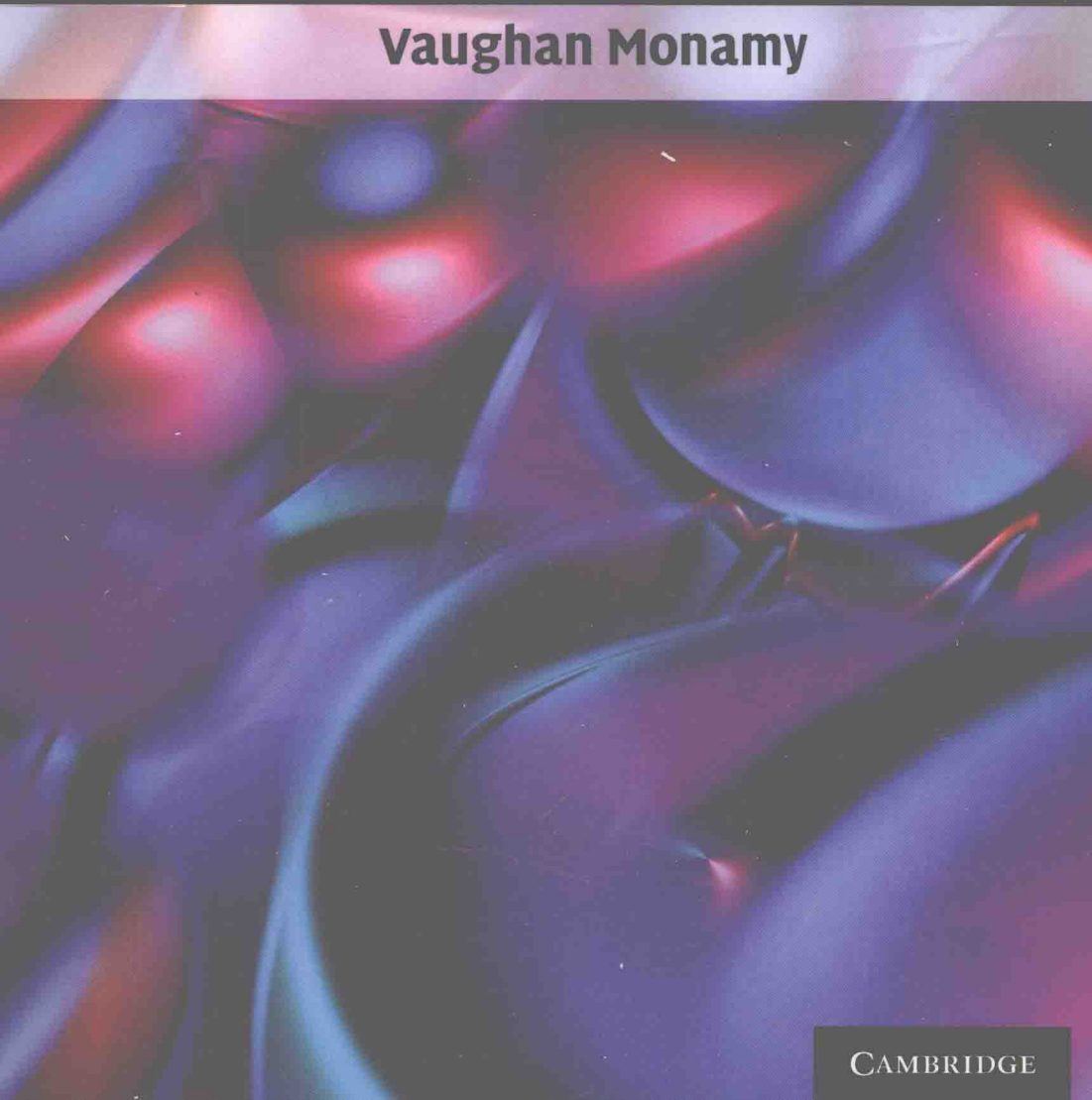
Animal Experimentation

A Guide to the Issues

SECOND EDITION

Vaughan Monamy



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Animal Experimentation

A Guide to the Issues, Second Edition

Animal Experimentation is an important book for all those involved in the conduct, teaching, learning, regulation, support or critique of animal-based research. Whilst maintaining the clarity of style that made the first edition so popular, this second edition has been updated to include discussion of genetically modified organisms and associated welfare and ethical issues that surround the breeding programmes in such research. It also discusses the

- origins of vivisection
- advances in human and non-human welfare made possible by animal experimentation
- principal moral objections to the use of research animals
- alternatives to the use of animals in research
- regulatory umbrella under which experiments are conducted in Europe, USA and Australasia.

The book also highlights the future responsibilities of students who will be working with animals, and offers practical advice on experimental design, literature search, consultation with colleagues, and the importance of the on-going search for alternatives.

Dr Vaughan Monamy is a senior lecturer in environmental science and environmental ethics at the Australian Catholic University in Sydney. In 2007 he was awarded an Australian Government Carrick Institute Citation for outstanding contributions to student learning, as well as his university's annual Excellence in Teaching award.

From the reviews of the first edition:

'. . . a "must-read" for any student or scientist involved in animal experimentation at any level.'
Michael Brands, The Physiologist

'. . . a clear, concise introduction to the major elements of the debate surrounding animal experimentation . . . Monamy's comprehensible text will appeal to the lay person, student and scientist alike.'
Tessa Smith, Biologist

'. . . a thoughtful consideration of both the pros and cons of animal research . . . an excellent guide to the issues [of which] current teachers of biology and biomedical science should take note.'
Asif A. Ghazanfar, Animal Behaviour

We need another and a wiser and perhaps a more mystical concept of animals. . . . We patronize them for their incompleteness, for their tragic fate of having taken form so far below ourselves. And therein we err, and greatly err. For the animal shall not be measured by man. In a world older and more complete than ours they move finished and complete, gifted with extensions of the senses we have lost or never attained, living by voices we shall never hear. They are not brethren, they are not underlings; they are other nations, caught with ourselves in the net of life and time, fellow prisoners of the splendour and travail of the earth.

Henry Beston (1928)

Preface to the second edition

It is now nearly ten years since Cambridge University Press published *Animal Experimentation: A Guide to the Issues* (2000). It is appropriate to reflect on what has happened since then within the accepted framework of the 'three Rs' principles (Replacement, Reduction and Refinement: Russell and Burch 1959) in animal research, education and testing. What advances, for example, have been made in the search for alternatives to the use of vertebrates in biomedical research? Are there fewer animals used in research today? Has there been a renewal of the impetus to refine experimentation with animal welfare as the priority?

To answer such questions requires a thorough reappraisal of where western biomedicine, education and safety testing are presently placing their emphases. Overwhelmingly, the extraordinary growth in research involving laboratory mice in all areas of genetic and molecular research has seen an increase in the number of animals used in scientific procedures for the first time since the 1980s. The enormous breeding programmes required to generate heterozygous strains of mice with genetic modifications has brought to bear entirely new ethical and welfare concerns regarding husbandry, housing and 'surplus' animals. What steps have been taken in Britain, Europe, the USA, Australasia and elsewhere to address this? Were existing regulatory frameworks adequate, or have relevant statutes been necessarily updated?

Iconic animal species, particularly non-human primates, continue to be used as research subjects, reflecting their importance as a model in some biomedical sciences, especially in the USA. What refinements to their lives in captivity have been made to respect their contribution to modern science?

At the end of the twentieth century general knowledge of computers and the internet was nowhere near as sophisticated as it is today. We are all more amenable to new ideas about where mass communication

can take us. Has this been reflected in alternative methods of studying organ systems or in facilitating corpse-free dissections?

With such questions in mind, Cambridge University Press has published an updated edition of *Animal Experimentation: A Guide to the Issues*. It is, once again, aimed at life science students, some of whom will follow careers as tomorrow's researchers, but at the same time its clarity of style and balanced treatment will enable lay people and experts to read it with equal ease. Students and researchers will find a non-intimidating, easy-to-read and readily understood introduction to the principal issues in the animal experimentation debate.

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Contents

1 Issues in animal experimentation

> Looking back at the first half of my life as a zoologist I am particularly impressed by one fact: none of my teachers, lecturers, or professors with whom I came into contact . . . none of the directors of laboratories where I worked, and none of my co-workers ever discussed with me, or each other in my presence, *the ethics of zoology*. No one ever suggested that one should respect the lives of animals in the laboratory or that they, and not the experiments, however fascinating and instructive, were worthy of greater consideration.
>
> *Miriam Rothschild (1986, p. 50)*

AIMS

The purpose of this book is to introduce life science students to the major issues that constitute modern debate about animal experimentation. Many such students will complete tertiary studies and go on to become the new generation of scientists. Those in the medical and allied health professions may only be exposed to animal experimentation in their undergraduate years. Others, such as geneticists, molecular biologists, veterinarians, physiologists, zoologists and agricultural scientists, may be actively involved in animal research at a postgraduate level and beyond. The welfare of animals in their care will continue to be of major concern to their employers, the granting bodies that fund their scientific research, and to the public at large.

At some stage all such students will have to make a personal decision about the extent to which they are prepared to use research animals. Such decisions may influence potential career options. Most will be able to justify, to themselves and others, many forms of experimentation. Conversely, others will find that they are incapable of any intrusive procedure involving certain sentient animals. For some, sentience will not be an issue – they will be unable to experiment using *any* animals. I argue that decisions as serious as this ought to be taken only after informed discussion about major issues in animal experimentation.

These decisions will inevitably be made against a backdrop of differing societal and personal opinions about what is, and is not, appropriate treatment of animals. Adrian Franklin (2007) reported ambivalence and inconsistencies in the attitudes of people toward the treatment of animals in general. In his survey, almost all respondents (93 per cent) were comfortable with the idea of the humane killing of animals for food. But what happens if you muddy the waters a little? People have vastly different opinions about the treatment of particular species. In western society, it is acceptable to kill lambs for food but it is unacceptable to kill dogs for the same purpose. What about wildlife? In Australia there is ongoing debate about whether kangaroos that are killed in pastoral areas when numbers become too high ought to be used for food (Franklin 2007). Again, opinions differ and rational arguments in favour of kangaroo culling for human consumption do not necessarily gel with the emotional responses people may have when considering the eating of that nation's symbol.

Similarities are evident in any discussion of animal experimentation. Surveys of attitudes to the use of animals for experimental and teaching purposes have consistently reported the majority of people in favour of such practices, where the procedures are important and suffering is minimised (e.g. Pifer *et al.* 1994; Medical Research Council 1999; Franklin 2007). Most people, however, will never have to perform any animal experiments. Many of the readers of this book will, and it is my contention that it is these people who need to be most informed. You must be able to determine what you are, and are not, capable of doing, and to express these opinions clearly and openly.

This book, therefore, aims to introduce to its readers important issues which have arisen out of the animal experimentation debate, that will assist them in making well thought out decisions. Not many students are fully conversant with the origins of modern animal experimentation practices, and fewer still with the intricacies of philosophical debate about the moral status of animals. In western countries, animal experimentation is governed by legislation that aims to ensure that animals are used in ways in which suffering is minimised. It is important to know how the day-to-day practice of animal experimentation is regulated. Are you aware of the increasing number of available

alternatives to using sentient animals in experiments? By the time you have read this book, it is hoped that such information will assist you as you explore your thoughts and feelings about the use of research animals. You, too, have a voice in any discussion of animal experimentation.

Debate over issues in animal experimentation has come a long way, particularly since the 1970s. No longer does reasoned debate take the following form: opponent 'All experimentation must cease!'; proponent 'You're being totally sentimental; scientists know best!'. Instead (thankfully), contemporary discussions involve such issues as: what constitutes an essential experiment? What is appropriate conduct when using animals in research? What alternatives to sentient animals are available? In many countries (e.g. Australia, New Zealand and Canada), such debate is conducted against a background of progressive legislation that ensures, through a system of enforced self-regulation involving institutional ethics committees, that all experimentation, from undergraduate rat dissections to complex surgery on cats, dogs or wildlife, is reviewed and approved before such procedures take place. Other countries (e.g. Britain) rely on rigorous government regulation and a staff of inspectors rather than on self-regulation in addition to an ethical review process. Whatever the regulatory framework (see Chapter 6), its presence also acts to ensure that most public concerns about the unrestricted conduct of experiments are allayed.

Nevertheless, whenever an emotive issue is under discussion, opinions will differ. For those who are vehemently opposed to the use of animals for scientific research, no experiment will ever be considered essential; no conduct when using research animals will be deemed appropriate. At the other end of the spectrum there still may be advocates of scientific research free from any regulation. From this perspective, the welfare of human beings will always outweigh the welfare of non-human beings, and the quest for knowledge must never be hindered by what may be interpreted as ignorance or sentimentalism.

Wherever you or I choose to stand along this continuum, we must never lose sight of the fact that many of the medical benefits humanity carries with it throughout the twenty-first century have arisen through the use of research animals. Dreaded diseases such as poliomyelitis were, less than 60 years ago, a scourge that ended many a young

person's life. Survivors bore crippling limb deformities or were kept alive using artificial respirators. Because of experiments in which monkeys were integral, polio no longer poses the dire threat of only a few decades ago. When a vaccine is developed which reduces the risk of humans becoming infected with human immunodeficiency virus (HIV), it is certain that animals will have had a role to play in ensuring that such a treatment is safe for people to use.

So why is there a dilemma? Why do some students and researchers feel they are unable to conduct experiments involving certain animals? Why are scientists attacked, verbally and physically, for participating in research which may provide similar breakthroughs to that made in the containment of polio? What is it that some sections of society find so reprehensible in such scientific activity? The answers to all such questions have an ethical basis. Few in society would object to an increased quality of life, human or non-human, for reasons other than ethical ones. For some, it is simply that the price of such advances may be too high. Thinking opponents of animal experimentation argue that for every experimental procedure that involves research animals, the means must justify the end. Radical opponents of animal experimentation argue (sometimes violently) that the end can never justify the means.

For people not involved in animal experimentation in any direct sense (remember, everybody who buys commercial products that have been tested on animals, or who has taken antibiotics or many other forms of medication is involved, indirectly), it is a relatively simple thing to be generally in favour of, or opposed to, research that involves animals. Most people are not working in laboratories, however. If you are to be part of the next generation of scientists, you might be. Readers have to determine what they are, and are not, capable of doing with research animals in their care. After all, if you are unable to justify aspects of your work to yourself, you will have difficulty justifying them to others.

What you will learn in your chosen field is that science demands professional objectivity from its adherents – little, if any, room is available for subjectivity, sentimentality and value judgements. Yet you, as scientists, are only human. You may find yourselves in the position

of having to justify certain activities conducted within your laboratories which, if conducted outside them, might be viewed as barbaric. A provocative example: why is it that a researcher can spend his or her weekend at home playing with a family pet and then, on Monday morning, return to their laboratory and test a potentially harmful chemical compound on stray or unwanted dogs? What is it about the donning of a white coat and the entering of the clinical atmosphere of a laboratory that can create an air of professional detachment? Opponents of animal experimentation may argue that such a scientist simply has ceased to feel. The scientists will argue that their work is of sufficient importance to the community at large to outweigh their feelings. Such scientists learn to manage the tension that arises between their professional objectivity and their personal feelings. For some readers, learning how to manage similar tensions will be an essential part of their education.

Contrary to what some opponents of animal experimentation may believe, it is both unfair and incorrect to state that western scientists currently conducting animal experiments are not fully conversant with their responsibilities. The overwhelming majority of practising scientists with whom I have been associated have a profound respect for the sacrifice made by their experimental subjects. They understand and work within their legal obligations and are in tune with the commonly voiced concerns of an increasingly well-informed general public. Modern society (rightly) insists that investigators increasingly pursue what are known as the 'three Rs' of modern research (Russell and Burch 1959):

- a *replacement* of animals in research, which follows on from an active development of alternatives;
- a *reduction* in the numbers of animals used in experiments;
- a *refinement* of laboratory and field techniques to reduce invasiveness and/or to increase the value of the results.

The 'three Rs' can be achieved in many ways. One tremendously important way is to alert science students to their future obligations as a part of their curriculum. It should be an ideal of modern society that no university be able to graduate students from the biological or

medical sciences who have not been educated formally in theories and practices that promote the humane care of animals used for scientific purposes. It is towards this goal that this book is directed.

DEFINITIONS

For clarity, it is necessary to define certain terms that will be used throughout. *Animal* is used in its broadest sense to encompass all animate life forms. Where necessary, I will differentiate between human and non-human animals. Much discussion about animal experimentation is concerned only with certain 'higher' animals. Instead of using 'higher' to describe those animals with which we most associate (i.e. vertebrates generally and certain mammals in particular), I will refer to their *sentience*. A *sentient* animal not only has an awareness of its surroundings but is capable of experiencing pain. Pain is a difficult concept to define and I deal with this in Chapter 7.

I use the term(s) *animal experiment(ation)* when discussing the use of live animals in research in the biological, psychological and medical technological sciences. The term is also appropriate to describe animal use in xenotransplantation and the generation of genetically modified and cloned animals, the production of biological extracts and the testing of consumer products, drugs and food. *Vivisection,* in the strictest sense, is the partial or complete dissection of live animals for research purposes. This is the definition that will be applied here. The word dates from a time when the majority of experiments involved dissection. *Anti-vivisection(ists)* is used to describe the stance of opposition (and its advocates) to this form of animal experimentation.

In many countries, research institutions now have committees that consider ethical aspects of research which involves sentient animals. They come under many names so in this book, for consistency, all are referred to as *Animal Ethics Committees (AECs)*.

SCOPE

Currently, information on all aspects of animal welfare is available in many printed publications and internet sources. Hundreds of documents have been written by moral philosophers, scientists and others advocating increased consideration for research animals. Many documents,