

Current Comments®

EUGENE GARFIELD

INSTITUTE FOR SCIENTIFIC INFORMATION®
3501 MARKET ST. PHILADELPHIA, PA 19104

Animal Rights and Wrongs: An Ethical View of Animal Experimentation from Graham Mitchell

Number 15

April 9, 1990

The use of animals in research continues to be a divisive issue for the animal-rights movement and the biomedical community. Animal-rights activists are adept at working with the media and in politics to advance their viewpoint. Although researchers have begun to explain their position, there remains a strong need to publicize the human benefit derived from animal experimentation. The primary need, however, is for more open communication between both sides of the debate. In an article reprinted from the *South African Journal of Science*, Graham Mitchell, professor of physiology, University of Witwatersrand Medical School, Johannesburg, South Africa, presents a balanced view of the ethical aspects of this complex issue.

The perpetual battle over the rights of animals is stronger and more emotional than ever. Animal-rights advocates have not wavered in their quest to reduce and, in some cases, totally eliminate animal experimentation. On the other side of the issue, biomedical researchers have begun to become more active in promoting the role that animal research plays in the advancement of medical research and practice.

Readers may recall the 1981 case of the "Silver Spring monkeys," which became a symbolic rallying point for the animal-rights movement. Edward Taub, a researcher at the Institute for Behavioral Research, Silver Spring, Maryland, was charged and convicted of animal cruelty. Although the conviction was later dropped on a technicality, the National Institutes of Health (NIH) withdrew its grant and retained custody of the monkeys. Recently, People for the Ethical Treatment of Animals (PETA), a radical animal-rights organization, secured a temporary restraining order to prevent euthanasia. After the order was lifted, researchers experimented on and subsequently euthanized one of the monkeys.¹ NIH scientists say the research performed on the "Silver Spring monkey" could help humans who suffer from nerve injuries. PETA intends to return to court to prevent experimentation

on the surviving monkeys, but the issue remains unsettled.

The animal-rights controversy is not new to *Current Contents*.² In 1977 I responded directly to a *Science* reporter who used *Science Citation Index*[®] data to "assess the impact" of Lester R. Aronson's research on cats at the American Museum of Natural History, New York.³ Aronson's research involved the removal of glands, nerves, and tissues in order to study animal sexual behavior. Animal-rights activists claimed that Aronson was cruelly abusing the animals for research that had "no value," and eventually the museum was pressured to abandon the research.⁴ Our citation analysis showed that Aronson's work was reasonably well cited in his field and, by this measure at least, had some "value."

Recently, a researcher's laboratory at the School of Veterinary Medicine, University of Pennsylvania, Philadelphia, was burglarized.⁵ Adrian Morrison, a professor of anatomy who uses cats to study sleep-deprivation, is a vocal supporter of animal models in biomedical research. His research is believed to have led to the identification of the human rapid eye movement sleep behavioral disorder and to have implications for the treatment of seizures and diseases such as epilepsy.⁶ Animal-rights activists have ac-

cused Morrison of using improper anesthesia and have said that his research is not beneficial to humans. The Animal Liberation Front (ALF) claimed responsibility for the break-in, while a spokeswoman for PETA said that the action should "be taken as a mild warning."⁵ This is an example of the terrorist tactics used by some extremists in the animal-rights movement to intimidate researchers and the public through brute force, rather than to persuade them through rational debate.

This is not to say that *all* animal-rights advocates are extremists. Most work within the system and are both politically aware and media savvy. For example, Trans-Species Unlimited (TSU) was instrumental in pressuring Michiko Okamoto, professor of pharmacology, Cornell Medical College, New York, to terminate 14 years of research on barbiturate addiction using cats.⁷ They picketed the laboratory, passed out literature, got Congress involved, sent letters, and made phone calls. Finally, in September 1988, Okamoto gave up her \$600,000 federal grant from the National Institute on Drug Abuse.

Animal-rights groups have not only become much more influential, but have grown considerably in number. These groups range from radical to moderate in their approach to the animal-rights cause. Radical groups, such as PETA, TSU, and the International Society for Animal Rights⁴ are most often in the news. ALF, in particular, openly supports violence and destruction and has been identified by Scotland Yard as an international terrorist group.⁸ These uncompromising groups intend to stop animal research altogether, immediately and at any cost. More moderate groups, such as the American Society for the Prevention of Cruelty to Animals (ASPCA), the Animal Welfare Institute, the Humane Society, and Animal Rights International, are not primarily concerned with quick and drastic bans on animal experimentation. They simply want to ensure humane treatment of animals.⁴

The biomedical community itself is not without vocal advocates of its position. In a recent article in *The Scientist*⁹, Frederick K. Goodwin, who directs the Alcohol,

Drug Abuse, and Mental Health Administration within the Department of Health and Human Services, discussed the issue. Believing that the passive approach taken by the scientific community has fostered the growth of the animal-rights movement, he urges clinical researchers to publicize examples of the human benefit of their animal research.

Goodwin also feels that scientists are time-pressured by their research responsibilities and find it difficult to meet the public challenges of the animal-rights movement. He proposes incentives for getting involved in defending and promoting animal experimentation—national awards, scientific fellowships, and so on.¹⁰ Scientists could then make a contribution to the animal-rights cause without derailing their career advancement. This idea has merit and deserves serious consideration by professional societies and private foundations.

The main organization speaking for biomedical researchers today is the National Association for Biomedical Research (NABR), formed by the 1984 merger of the Association for Biomedical Research (organized in 1979) and the National Society for Medical Research (1945). NABR tries to educate the public and legislators on the scientific and societal value of animal research and lobbies against bills that would restrict or ban animal research.⁸ Other organizations are also speaking out in favor of using animals in research. Patients who have profited from animal research are forming coalition groups like the Incurably Ill for Animal Research (iiFAR) in Bridgeview, Illinois.¹¹ While this is a positive sign, more needs to be done to explain the human cost of limiting animal research.

NABR points out that medical research is already being affected by restrictions on animal use. Compliance with amendments to the Animal Welfare Act of 1966, passed in 1985, and new US Department of Agriculture rules will cost an estimated \$2 billion.¹² Medical costs are sure to rise as a result. And worse, work on life-saving and life-enhancing medical research may be impeded.

The fact is that animal research has been vital to breakthroughs in cancer, mental ill-

ness, and heart disease.⁷ According to a recent iiFAR report, using animals in research has enabled scientists to develop antibiotics to fight infections and to discover insulin to control diabetes; to raise the cure rate for children with acute lymphocytic leukemia from 4 percent in 1965 to 70 percent in 1988; and to develop immunizations against mumps, rubella, diphtheria, and polio.¹¹ Work with dogs and other animals has led to open-heart surgery, the cardiac pacemaker, and organ transplantation. And, in the monumental fight against AIDS, the use of appropriate animal models is critical to the development of vaccines and therapies.¹³

The scientific community has shown its willingness and initiative to change. Recently, two international drug and cosmetics firms, Avon Products Inc. and Revlon Inc., announced that they would no longer use the controversial lethal dose 50 and Draize tests.⁹ Colgate-Palmolive has developed a test to screen new substances on egg membranes, and Noxell Corporation has decided to test new cosmetics on mouse-tissue culture.⁴

According to a recent article in the *Economist*,¹⁴ the number of laboratory animals used in the US and the UK has halved since its peak in the mid-1970s. Much new research can be conducted on cells rather than animals. Laser fluorimetry, a molecular technique that can measure the biological activity in a single cell, has improved the quality of data collected from *in vitro* tests. Neuropharmacologists no longer need to study many groups of animals to test certain drugs. Now they can measure the chemical and electrical signals that pass between isolated nerve synapses within *one* animal. Several new "test-tube" methods have also been developed: the reassociation of dispersed embryonic cells can predict possible birth defects, the coagulation of crab's blood can monitor fever-causing potential, and skin cell cultures can screen for probable allergy causes. But it is unlikely that direct animal experimentation will be completely re-

placed by alternative methods in the near future.

Graham Mitchell: A Brief CV

In the following article reprint, Graham Mitchell, professor of physiology, University of Witwatersrand Medical School, Johannesburg, South Africa, discusses the ethical aspects of the animal-rights issue. Born in 1944, Mitchell possesses a strong background in veterinary science.¹⁵ In 1971 he became a registered veterinary surgeon and is currently a member of the South African Veterinary Association, the Royal College of Veterinary Surgeons, the British Veterinary Association, the Physiological Society of South Africa, and the Zoological Society of Southern Africa. In 1972 Mitchell began lecturing at the University of Witwatersrand Medical School, where he presently serves as Ad Hominem Professor of Physiology and honorary professor of medical education. He is also chairman of the Animal Ethics Committee.

Mitchell describes two highly divergent views of the use of animals in research: that animals are to be considered instruments with their lives having no moral significance and that animals, like humans, do indeed have rights and ought not to be subjected to needless pain and suffering. His conclusion is shared by many involved in this controversy: some middle ground must be reached whereby both animals and humans are protected. Some animal activists should rely on more rational means to make their point. More scientists should stress the importance of using animals to advance medical research and health care. And, perhaps most important, both the animal-rights movement and the biomedical research community should learn to communicate better—to debate this crucial issue openly and fairly.

* * * * *

My thanks to Cynthia Miller for her help in the preparation of this essay.

©1990 ISI

REFERENCES

1. Anderson G C. Fight over Maryland monkeys. *Nature* 343(6256):297, 25 January 1990.
2. Garfield E. Animal experimentation—when do the ends justify the means? *Essays of an information scientist: the awards of science and other essays*. Philadelphia: ISI Press, 1985. Vol. 7. p. 26-36.
3. ———. Citation analysis and the anti-vivisection controversy. Parts 1 & 2. *Ibid.*, 1980. Vol. 3. p. 103-8; 316-25. (Reprinted from: *Current Contents* (17):5-10, 25 April 1977; (48):5-14, 28 November 1977.)
4. Feder B J. Pressuring Perdue. *New York Times Mag.* 26 November 1989. p. 32-4; 60; 72.
5. Rosenberg A S. Vet school break-in denounced. *Philadelphia Inquirer* 16 January 1990. p. 1-B; 3-B.
6. Mahowald M & Schenck C H. Letter to editor. (Two views on Penn researcher.) *Philadelphia Inquirer* 31 January 1990. p. 14-A.
7. Lyall S. Pressed on animal rights, researcher gives up grant. *New York Times* 22 November 1988. p. B1; B5.
8. Smith S J, Evans M, Sullivan-Fowler M & Hendee W R. Use of animals in biomedical research. *Arch. Intern. Med.* 148:1849-53, 1988.
9. Mervis J. U.S. officials defend animal research. *The Scientist* 4(1):1; 4, 8 January 1990.
10. Animal research versus humane use: the struggle to sustain our research advances. (Interview with Frederick K. Goodwin.) *FASEB J.* 3:2563-4, 1989.
11. Meet our members: Royanne Hollins—Sacramento, California. *iiFARsighted Rep.* 2(4):2-3, November 1988.
12. Carey J. Will relief for lab animals spell pain for consumers? *Bus. Week* (3131):43-4, 30 October 1989.
13. Gardner M B & Luciw P A. Animal models of AIDS. *FASEB J.* 3:2593-606, 1989.
14. Alternatives to animals. *Economist—London* 313(7631):135-6, 2 December 1989.
15. Mitchell G. Personal communication. 7 March 1990.

Reprinted with permission from *S. Afr. J. Sci.* 85:285-8, May 1989. Copyright 1989 by Associated Scientific and Technical Societies of South Africa.

Guarding the middle ground: the ethics of experiments on animals

Graham Mitchell

Opposition to the ways in which animals are treated, whether in factory farming or scientific research, is growing. The users of animals should be aware of the moral dilemma that their activities pose, so that the processes used to resolve it become an accepted part of academic and public life.

There is a view that there is no ethical or moral¹ issue involved in using animals for experiments. If so, there is no more need to seek alternatives to animal experiments, or to regulate animal experiments, or, even, to comment, than there is to seek solutions for any moral dilemma.² This view is plainly wrong. Opposition to the ways in which animals are treated, including opposition to their routine use in factory farming and scientific research, is growing. For example, since 1980 in the United States, more than 35 bills and resolutions have been introduced in the US Congress, calling for restrictions on the treatment of

laboratory animals.³ At the other, less democratic extreme, a dozen threats of death or violence to individual scientists and 15 raids on research institutions have occurred in the USA since 1983.³ In South Africa, representations to amend existing laws governing animal welfare to include animal experimentation are being made, and, although I am unaware of any acts of violence, opposition to animal experimentation is highly visible.

Professor Mitchell is in the Department of Physiology and is Chairman of the Animal Ethics and Control Committee, University of the Witwatersrand, Wits 2050 South Africa.

Table 1. Animal images of childhood.

Idealised pictures of farm animals
Cartoons featuring cats and mice
Idealised freedom of animals in national parks
Pet keeping
Beatrix Potter books/*Black Beauty*
Nursery rhymes
Horror of dog/cock fights

That there is an issue, and that there is a moral dilemma which bears ethical examination, seems plain. It follows that users of animals should be aware of the dilemma, so that the processes used to resolve it become an accepted part of academic and public life, are not seen to be obstructive to the process of discovery, and take into account public fears and concerns.

Understanding the origins of the issue would undoubtedly be of value. The psychological basis of the dilemma, however, is not well understood, and moreover is poorly researched. For example, it is not known why some humans form emotional bonds with animals, bonds which vary in strength, and yet are happy to use animals in experiments that they would not subject their companion animals to. What is known is that the inconsistency has its roots in childhood. Indeed, it has been said that for children there is no field of morality as inconsistent.⁴ For example, Table 1 lists images which most of us will recognise as being part of childhood. All these images are designed to heighten sensitivity to ideal values, values shared by humans and other animals. These images do adults credit because they reflect the awareness that adults have of the reality, shown in Table 2. Given these conflicting images, however, it is not surprising that adults have no coherent, generally accepted basic moral reference point from which they can develop an attitude to animals. This confusion finds expression in the everyday use of words like 'lamb' to convey pleasurable messages, as in 'Oh, be a lamb and fetch me so and so', implying meekness, gentleness, helpfulness and so on, and use of words like 'pig' to convey something different. Perhaps even more confusing for a child is that some

animals which usually are the epitome of cruelty or aggression, for example leopards and tigers, are in other circumstances held up to be examples of courage. An extension of this is the introduction of a theological component, evident in the use of phrases like 'Don't be a beast, be an angel', which imply a qualitative difference between man and animals, which sets man apart from other animals.

Table 2. The reality of adulthood.

Killing of farm animals for food
Factory conditions of modern farms
Artificial captivity of zoos
A "kill" as the highlight of a visit to a national park
Glorification of fox hunting
Glorification of bull fighting
Euthanasia of old/ill animals

Perhaps even more confusing is our ambivalent attitude towards our pets. We bring them into our homes, give them personal names, groom them, and take them to expensive doctors for treatment. But we also suppress their natural sexuality and aggression, ignore the parasites they bring into our homes, and the faeces they deposit in our gardens, parks and streets. And we punish them for acts that are not acceptable to us, and kill them when they are lost, ill, old or develop unacceptable traits.²⁹ Can we realistically expect a rational attitude to develop in these circumstances? It seems unlikely. Furthermore, the chance of regaining some perspective is receding as urbanisation proceeds. It is safe to say that the overwhelming majority of people in westernised societies have never known any animals other than pets. The people in our society who do not protest about the use of animals, and who know them best, are farmers and veterinarians.³⁰ The group of people who protest most are 70% female, overwhelmingly white, aged between 21 and 49 years, live in suburban areas, and are wealthy college graduates.³ Such persons are effectively insulated from the real world where pestilence, famine and early death dog the lives of animals and man.

One response to this confusion is to categorise animals: the result is that we find it easier to use in experiments animals of low esteem like mice and rats; vermin, pests and the carriers of plague. Indeed about 80% of experimental animals used in experiments are mice and rats,⁵ and by and large people are comfortable with this. Not only is knowledge being generated but a potential threat is being removed. On the other hand, it is more difficult to experiment on dogs and cats: experiments on dogs and cats were forbidden in the original 1876 version of the Cruelty to Animals Act in the UK.

The final outcome of our vacillation is that most humans have highly elaborate attitudes to animals, made up of contradictory and inconsistent subsets. The consequence of this confusion, which directly affects people who use animals in experiments, is that two distinct, clear-cut views have gelled. Holders of the first view believe that an animal is a delicate and expensive piece of equipment used in scientific experiments. Given a few arbitrary limits, the lives of the animals have no moral significance.⁶ Once these minimum standards or limits have been met (for example, provided that wilful cruelty or ignorance are avoided, or once the requirements of being licensed to perform experiments on animals have been met, as in the UK), then no further issues arise. Holders of this view often quote the theological perspective mentioned above, that humans are unique, and different from animals, and have, therefore, some moral authority in doing so. Furthermore, the argument is sustained by considering that any other attitude necessarily destroys the first view. For example, compromise is seen to be unthinking weakness which will lead to the idea that animals have rights.⁷ If animals have rights, they would become subjects rather than objects, with needs, a pattern of life, a world view, and as such could not be experimented upon and then disposed of. With this perspective most users of animals could not reconcile the idea that they and the animals they are using have separate, different and almost certainly

opposite views of the experiment being done.

This first view receives tacit support from the notable absence of prolonged examination of the case by professional ethicists. Ethicists examine human experimentation closely but generally ignore animal experimentation. Thus a 79-page-long bibliography of the most pertinent references on society, ethics and life sciences includes no references on animal experimentation.⁸ This lack of attention by ethicists is striking because in a numerical sense animal experiments (compared with human experiments) are an enormously greater enterprise. The number of animals involved is estimated to be 140 million per year (Table 3),⁹ the number of researchers has been estimated by Garfield¹⁰ to be greater than a million, and it needs many expensive holding facilities and an almost incredible concentration of intellectual expertise. Moreover, animal experiments touch every aspect of human life to the extent that it has been said that the only things in our society not tested on animals are jokes. In short, it is the sheer normality of animal experiments that makes them invisible. Besides, the benefits to man of animal experiments are freely recognised to be immeasurable and continue to grow.

Sanctioned and sustained by these powerful arguments, holders of the first view see campaigns against the use of animals in a clinical, scientific way. They see the campaigns as reflecting a deep-seated psychological need in their antagonists to prevent discovery of knowledge, and an animosity to application of the fruits of discovery.¹¹ They point out also that the antagonists are drawn from that section of society protected from the consequences of ignorance. Further, the attacks suggest that the moral standards and ethics of researchers leave much to be desired. Thus the attacks denigrate the researchers, question the value of their research, and support the idea of a conservative, limited world of knowledge that can be coped with. This view is frequently published in the media. For example, Neville Hodgkinson, of the London *Sunday Times*,¹² reports that the British government inquiry into human fer-

tilization, chaired by Baroness Warnock, urged that a statutory body be set up to regulate and govern all aspects of infertility and related issues. The body (it was said) should be chaired by a lay person with several lay representatives, so that 'doctors and scientists working in the field could be subjected to the moral views of the public, [because] *science and medicine are moving so fast that the need for such regulation is becoming more important by the day*'. Thus, antagonists to animal experimentation can be seen to be blaming current political, social, health and economic ills on such a rapid supply of knowledge that mankind cannot distinguish basic moral reference points any more.¹³ So societies will become, if they are not already, ungovernable. Mankind will be, and is being, dragged unwillingly to its doom by the wild horses of knowledge. It is surely not a coincidence that scientists usually are depicted in comic books and films (for example, Superman or James Bond) as being drunk with power, if not deranged or out and out mad.

The second view, that of informed antagonists,¹⁴ is far more coherent and less arrogant than that which I have depicted. This second view hinges on whether it is ethical to use animals in experiments, and in so doing (in a proportion of experiments) knowingly inflict pain, distress and suffering in pursuit of knowledge. If it is not ethical to do so, then the use of animals must be limited increasingly until it is eliminated. An important buttress of this view is the Kantian idea that use of animals as objects rather than subjects leads to a hardness and insensitivity to suffering in human societies, which in turn leads to a cheapening of life and exponential increase in the wanton abuse, ultimately, of people. As an example, holders of this view draw the parallel that animals were once employed, prized and protected as machines to pull ploughs and drive mills. As man replaced these uses with machines, he exploited animals increasingly as raw material to be processed into food and to be experimented upon.¹⁵ Possibly for similar reasons it was easy also to keep slaves, to use children as

workers in factories, to categorise people by race or skin colour. And it is easy to see how it is that workers 'sell their labour' or 'have a work capacity' and people are referred to as productive units or consumers with turnovers or consumption calculated per capita. And I can understand why my university can contemplate seriously the idea that students should be identified by a number only rather than be recognised as individuals with a name, world view and so on, and this, remarkably, under pressure from the students themselves. This idea also helps to explain the mentality that condemns single acts of destruction, like murder, while collective acts of cruelty or murder, like war, are condoned.

Holders of this second view argue retrospectively that, since the use or categorisation of humans is abhorrent, so is it to use animals similarly. Animals, thus, do have claims, they can feel pain and can suffer, and these attributes cannot be dismissed. The idea, however, that there is a cause and effect relationship, say, between animal experiments and war seems very far-fetched. Rather, the point is that if we were to be so sensitive to callousness and brutality or inhumanity that we could not conceive of allowing the use of animals in experiments, then nor could we, to give an example, conceive of waging war.

Holders of the second view support their argument by pointing out that, contrary to the theological perspective, humans are not unique. In this, Darwinian, view humans do not have attributes or a single characteristic that makes them different from other animals. The attributes often considered to be unique to humans are an ability to make tools, a capacity for language, rationality, intelligence and culture, especially a culture that is Lamarckian.¹⁶ But all these attributes are present, although perhaps less refined in animals. The characteristic nature of a particular animal then becomes the peculiar, complex arrangement of attributes it has. Indeed, to expect a single differentiating quality is an absurd notion. Humans, in other words, are not different from other animals and therefore have no moral authority to ex-

Table 3. Use of experimental animals in the world.

Country	Number of animals × 10 ⁶	Population × 10 ⁶	Population ÷ animals
United States	90	250	2.8
Japan	13	120	9.2
Austria	8	7.5	1
Australia	8	15	2
United Kingdom	5	55	11
France	4.4	54	12
Holland	3.0	14.4	5
South Africa	2.0	35	17
Canada	2.0	24	12
Finland	1.6	4.8	3
India	1.0	700	700
Sweden	0.9	8.4	9.3
Israel	0.5	4.0	8
Norway	0.09	4.1	46
Totals/average	139.5	1296.1	10*

* excluding India

exploit them. It is life itself which is unique and must be protected, not its discrete parts.¹⁷

No-one can suggest that one or other of these two views is the more rational or aesthetically pleasing such that only one logically should be dominant. Nor is the argument substantially changed by including the most distinctive characteristics of humans: the ability to record the past and to have the prospect of a future. There are only the two views. Animals fit into either the delicate instrument-to-be-used category or the people-with-claims category. Given this, it is plain why the issue of animal experimentation generates massive emotional argument with no apparent winner in sight. It is the archetypical conflict situation and we might best be content if we were to let it rest. We cannot make brutalities less brutal, nor can we see without light. Such a response, though, is inappropriate. As rational agents with some control over our lives and an ability to arrange our institutions to minimize predicaments of moral conflict, we should.¹⁸ Any other approach would simply perpetuate rather than resolve the conflict.

Resolution of the conflict lies in the creation of a middle ground that is comfortable, consistent and sustainable against pressure from both sides. A key starting point is to accept that both animals and humans have interests. Interests, not rights.²⁷ It is then a relatively easy step to argue, using the utilitarian approach and in the framework of the inexactness of an interest, that there may be circumstances in which interests of animals may have to be over-ridden in order to meet human interests. In other circumstances the reverse may be true. It would be most easy to do this if a simple equation existed for calculation of the weight of relative interests and another for the calculation of cost: benefit ratios. No such equations exist. Similarly, there is no logically robust criterion for drawing lines between what is permissible and what is not. The range of experiments and of motives behind the experiments is too large.

A more intellectual and second-level approach to resolution is the use of the persuasive moral argument. This tactic is the one most favoured by participants because of its inherent characteristic of allowing full

expression of views and feelings. Thus it is common experience, highlighted by media debates, that holders of the first view, that animals are objects, point out the glaring inconsistency of opposition to use of animals in experiments when animals are exploited for so many other things as well. This inconsistency is especially irritating because animal experimentation is the only use of animals which can lead to something tangible, obvious and of immense value. All other uses of animals are either destructive or for the gratuitous pleasure of humans. It is worth noting, however, the flaw in the idea that consistency has moral value. If consistency had intrinsic moral value, if one saw a leopard about to attack a child it would be inappropriate to intervene unless a consistent effort was made to intervene every time the leopard attacked any animal it might wish to attack. Plainly, consistency is not relevant in a moral dilemma. There is only the immediate dilemma for which consistency is inconsequential. The level of interest of both parties in the outcome is the determinant of action.

On the other side, holders of the second view attempt subversion of the first view by emotional and moralistic arguments, approaches which massage the values embedded in childhood (Table 1). While this approach is useful for allowing the airing of an opposing view, the process is useless for resolving the conflict, because no middle ground is established, while the chasm is highlighted.

The usual, familiar reaction to the frustration generated by failed moral arguments is recourse to law. Two types of legal approach have developed. The first is the construction, usually at international conferences, of conventions and guidelines which attempt to define the limits of use, and what is permissible and what is not. Typical of these are the CIOMS guiding principles for biomedical research involving animals, which were formulated with the help of holders of both views.¹⁹ This type of effort has followed attempts of the World Medical Association to control

human experiments as set out in the Tokyo revision of the Declaration of Helsinki.

The principal importance of guidelines is that they define the middle ground. There is no requirement, however, that researchers follow them and no way of enforcing them, as they do not have the force of law. Moreover guidelines, by emphasizing the general, avoid the judging of issues on their specific merits. Thus a natural extension of these informal guidelines is the construction of formal laws to govern animal experimentation. In the past it has been thought that laws governing cruelty to animals were sufficient. However, under the British Cruelty to Animals Act of 1876, a law in existence for 110 years in a country in which some five million animals are used by more than 10 000 researchers annually,²⁰ not a single successful prosecution of a medical scientist has occurred. Attempts in the USA to prosecute under their Animal Welfare law have also been unsuccessful.²¹ Laws defining and constraining acts of cruelty are, in any event, not designed to protect animals but to protect human sensibilities.²⁸ And laws have never been useful for deciding moral disputes. All that the law can do is provide guidelines as to what society will tolerate and to state the relative abhorrence society feels at transgression, by listing penalties.

The failure of laws and informal guidelines to resolve the conflict has had the important and serious consequence of threats to prosecute journals which publish articles that seemingly transgress limits. It has even been suggested that journals should be punishable by law.²⁰ This threat has adjusted the views of editors. At a recent meeting of the Physiological Society in the UK, the chairman of a session spoke against the publication of results reported in his session, because the use of animals showed cruelty. The report was not published by the society's journal. Similarly, the editor of the journal *Pain* refuses to publish any report which indicates that animals are unable to indicate or arrest the onset of suffering. While attractive to holders of the second view, and very threat-

ening to holders of the first, censure of journals is unlikely to be generally successful. It is likely to be arbitrary, costly, time consuming, not even-handed, and authors simply will avoid 'fingere'd journals.

These comments refer best to the principle issue under discussion, that is, whether performing an experiment on an animal is in itself an act of cruelty as defined in law. The international experience is that use of animals in experiments is acceptable, and is sanctioned by law provided that all reasonable steps are taken to prevent unnecessary or unjustifiable suffering at the time of experimentation.^{22,23} In other words, the issue is not whether animal experiments should be conducted but that they be conducted humanely. Humane experiments prevent or minimise suffering.

The notions that the basis of legal decisions is that of 'have all reasonable steps been taken to prevent misuse or abuse', that experiments should be humane, that whim is no basis for rational decision making, that prosecutions by disinterested persons are probably illegal, and that even indirect legal sanction as implied by putative prosecution of journals is unlikely to be successful, has suggested that defence of the middle ground, and the resolution of the conflict, should pass to a body of individuals who by training, experience and interest can arbitrate. The cornerstone of this suggestion is that no general justification for experimentation exists and, therefore, each case should be treated on its merits. The implication goes further. The consideration of separate cases properly fights against a tendency to generalise (as licensing of individuals would), thus recognising the diversity of the interests at issue. Moreover, consideration of separate experiments allows a structured ethical approach.²⁴ Thus ethics committees have been established.

A major criticism of this approach is that ethics committees allow individuals to avoid the moral issues, because, 'as someone else is looking after that for me, I need not'. Another criticism is that, in deciding whether or not an experiment should be

done, ethics committees must consider whether or not the problem is trivial or worth solving. That is, they must consider the quality of the science. Scientists whose moral standards are already under attack (see above) resent even more attacks on their scientific integrity. Consideration of the quality of the research is seen as a direct attack on academic freedom. Moreover, the establishment of an ethics committee admits that there are two views of animal experimentation, an idea not attractive to either the holders of the first or second view. A side effect of this conflict is the resistance to inclusion of non-scientists (laymen) on committees to provide balance,²⁶ because their presence highlights the point that more than science is at stake, when scientists argue the contrary.

The over-riding value of an ethics committee is, however, that it underscores the idea that all reasonable steps have been and are being taken to protect the interests of both animals and researchers. Evidence of this is the increasing demand by journals and statutory funding bodies, both here and overseas, for acknowledgement of clearance of the use of animals by ethical committees. This requirement is also to be found in standing orders for higher degrees at my university.

Of course, it can be argued that true safety, proper sensitivity to the needs of animals and respect for academic freedom can be retained and the need for an ethics committee dispensed with, by relying on the conscience of researchers, proper supervision of the work by their seniors, and critical appraisal of methods and results by peers. The idea that objectivity of the level required to allow such control can exist has, however, not found support. As Professor George Rolleston, Professor of Anatomy and Physiology at Oxford, explained so cogently in 1876, 'absorbing studies . . . lift a man so entirely above the ordinary sphere of duty that they betray him into selfishness and neglect of duty'.²⁵ Ethics committees are free of such cupidity.

These arguments make a case that ethics committees are the proper arbiters of animal experimentation. They are ideally

placed to be sensitive to public concerns and not to be obstructive of discovery. Their function is to define and guard the middle ground objectively and jealously, and thus resolve the moral dilemma of

animal experimentation. Civilised societies seeking to protect animals and humans from avoidable harm, and indeed tragedies, can do little more.

References and notes

1. In this article I have used moral and ethical interchangeably. Strictly, morality refers to moral choice and conduct and to those considerations such as values, interests and commitment which shape them. Ethics is a secondary activity of reflecting on, justifying and criticising such conduct and considerations. See Camenish P.F. (1986). Goals of applied ethics courses. *J. high. Educ.* 57, 493 – 509.
2. White R.J. (1971). Anti-vivisection: the reluctant hydra. *The American Scholar* 40, 503 – 507.
3. From an address to the Physiology Society in Cambridge, England, by W.M. Samuels, published in *The Physiologist* 29, 43 – 44; 1986.
4. Isaacs S. (1930). *Intellectual Growth in Young Children*. Routledge, London.
5. *Experiments on living animals, Statistics—1977*, Cmnd 7333. HMSO, London; 1978.
6. As implied by Sir John Eccles in 'Animal experimentation versus human experimentation', in *Defining the Laboratory Animal*. National Academy of Sciences, Washington, D.C., pp. 285 – 293; 1971.
7. As expressed by Regan T. in *All That Dwell Therein*. University of California Press, Berkeley; 1982.
8. The claim of pertinency is that of the publisher. The reference, Sollitt S. and Veatch R.M. *Bibliography of Society Ethics and the Life Sciences, 1979 – 1980*. The Hastings Center, Hastings-on-Hudson, N.Y.
9. Compiled from: Sperlinger D. *Animals in Research*. John Wiley, London (1981); South African Medical Research Council *Newsletter* 15(6) (1984); Canadian Council on Animal Care, Animal Utilization summary, (1982); *World Book Encyclopaedia*, (1982).
10. Garfield E. (1977). Citation analysis and the anti-vivisection controversy. *Current Contents* (17), 25 April, 5 – 10.
11. As put by Visscher M.B. (1975). *Ethical Constraints and Imperatives in Medical Research*, pp. 78 – 79. Charles C. Thomas, Springfield, Illinois.
12. As reported in the *Star (Johannesburg)*, 5 Sept. 1987, p. 8.
13. As in 'When men play God', *Sunday Star (Johannesburg)*, 6 Sept. 1987.
14. The idea of a first and second view is that of Cora Diamond, Associate Professor in the Department of Philosophy, University of Virginia, Charlottesville, Virginia, USA. In *Animals in Research*. Wiley, New York; 1981.
15. See Berger J. (1977). Vanishing animals. In *New Society* 39, 664 – 665.
16. Medawar P.B. (1976). Does ethology throw any light on human behaviour? In *Growing Points in Ethology*, edit. P.P.G. Bateson and R.A. Hinde, pp. 497 – 506. Cambridge University Press, Cambridge.
17. As explained by Chesterton G.K. In *Orthodoxy*, pp. 46 – 47. Doubleday, New York; 1959.
18. As argued by Marcus R.B. (1980). Moral dilemmas and consistency. *J. Phil.* 77, 121 – 136.
19. Published by the Council of International Organisations of Medical Sciences (1985), Geneva.
20. Goldman L. (1981). In *Animals in Research*, p. 111. Wiley, New York.
21. *Times high. Educ. Suppl.*, 3 Oct. 1980.
22. *New Scientist*, 21 Aug. 1986, p. 16.
23. *Veterinary Record* 117(3), 49; 1985.
24. Thung P.J. (1981). *Medical Education* 15, 79 – 84.
25. Report of the Royal Commission on the practice of subjecting live animals to experiments for scientific purposes. Parliamentary Papers C 1397, xli, 277. London.
26. The legal principle being that one cannot be a judge in one's own cause.
27. The idea that humans have inalienable rights is not generally agreed. See Kuhse H. and Singer P. (1985). *Should the Baby Live?* Oxford University Press, Oxford.
28. Karstaedt O.A. Vivisection and the law. *THRHR* 45, 349 – 369, 1982.
29. An estimated 15 million dogs and cats are destroyed annually by welfare societies in the USA.
30. *Science* 238, 880 – 882; 1987.