41

The Moral Status of Animals and Their Use As Experimental Subjects

BERNARD E. ROLLIN

For most of human history, society has been satisfied with a very minimalistic ethic for animal treatment. This ethic, which prohibits the deliberate, useless, willful, sadistic, intentional infliction of pain and suffering on, or outrageous neglect of, animals, reflects both the commonsense empathetic awareness that animals could suffer, and a realization that those who cruelly abuse animals are likely to go on to abuse people. The latter insight has been confirmed by contemporary research (Arkow 1994; Kellert and Felthous 1985).

The major reason that such a minimal ethic was socially adequate is that the overwhelming use of animals was agricultural (food, fiber, locomotion, and power) and the essence of agriculture was husbandry. Husbandry (etymologically, "bonded to the house") entailed care of the animals, specifically placing them in environments for which they were biologically suited, and augmenting their natural coping attributes with additional food, shelter, protection from predation, etc. The relationship with animals was symbiotic, in that humans in turn benefited from using the animals' products, labor, or lives. So powerful was this caring relationship with the animals that the psalmist in the 23rd Psalm uses it as a model for God's relationship to humans: "The Lord is my shepherd . . ."

This sort of symbiotic agriculture required that the farmer maximize the satisfaction of the animals' basic interests, and not cause the animals harm. Harming the animals meant diminishing the animals' production: if you hurt the animal you hurt yourself – the strongest possible sanction for a self-interested rational person. Thus a minimalistic ethic forbidding cruelty was socially sufficient to deal with those who were sadistic or irrational – the carter who in a rage beats his horse, the sadist who tortures animals for pleasure, the deviant farmer who does not feed or water the animals.

The development of high-technology intensive agriculture – "factory farming" – destroyed symbiotic husbandry-based agriculture. Technological "sanders" such as antibiotics and vaccines allowed us to put animals into environments which harmed the animals while still promoting efficiency and productivity. This new kind of agriculture, coupled with the rise of significant and highly visible research on animals, in essence destroyed symbiotic animal use and forced society out of its longstanding satisfaction with the traditional, minimalistic ethic.

It is patently obvious that research on animals is radically different from husbandry agriculture. Whereas traditional agriculture necessitated inflicting minimal harm on

animals, the infliction of pain, suffering, disease, deprivation, fear, injury, and various other noxious physical and psychological states upon animals in order to study their effects was essential to research. However, neither factory farming nor research on animals fitted the traditional notion of cruelty, since neither activity was sadistic, purposeless, or useless. Although many animal advocates opposed animal research as "cruel," it was difficult and implausible for society as a whole to equate medical researchers, whose intention was to advance knowledge and cure disease, with the sadists and psychopaths to whom the anti-cruelty ethic was addressed and whose intention was simply to achieve pleasure at another being in pain. (In conjunction with this view of research, virtually all anti-cruelty laws in the United States exempted animal research from their purview, either by statute or by judicial interpretation.) The conceptual limits of the traditional simplistic understanding of our treatment of animals as either husbandry, "kindness," or cruelty was exposed, and the need for more sophisticated moral evaluation of the burgeoning field of animal research and testing made manifest.

The Moral Critique of Research on Animals

Both Plato and Hegel argued that at least part of a moral philosopher's job is to help draw out and articulate nascent and inchoate thought patterns in individuals and society. In keeping with this notion, several philosophers, beginning in the 1970s, made explicit a number of moral reservations about human uses of animals in general, including invasive animal use in research and testing, and thereby helped draw out the moral queasiness at such use that had gradually developed in society in general. This task was first engaged by Peter Singer in 1975 as a chapter in his book *Animal Liberation*, wherein he challenged the moral justification for a great deal of animal use, including the moral permissibility of harming animals to advance scientific knowledge. Singer's discussion of research on animals elegantly articulated widespread social reservations about such *use* of animals, and is still in print. In 1982, Bernard Rollin's *Animal Rights and Human Morality* again challenged the morality of hurting animals in research, and also pointed out the inadequacy of the *care and husbandry* provided to such animals, leading to additional suffering which was not only not part of the research, but also, in many cases, inimical to its purposes. Additional work by Tom Regan, Steve Sapontzis, Evelyn Pluhar, and numerous other philosophers, aided by scientists such as Jane Goodall, who have come to see the moral issues with clarity, has continued to give prominence to the moral questions of research on animals.

Although different philosophers have approached the issue from different philosophical traditions and viewpoints, it is possible to find a common thread in their arguments questioning the moral acceptability of invasive animal use. Drawing succor from society's tendency during the past 50 years to question the exclusion of disenfranchised humans such as women and minorities from the scope of moral concern, and the correlative lack of full protection of their interests, these philosophers applied a similar logic to the treatment of animals.

In the first place, there appears to be no morally relevant difference between humans and at least vertebrate animals, which allows us to include all humans within the full scope of moral concern and yet deny such moral status to the animals. A morally

relevant difference between two beings is a difference that rationally justifies treating them differently in some way that bears moral weight. If two of my students have the same grades on exams and papers, and have identical attendance and class participation, I am morally obliged to give them the same final grade. That one is blue-eyed and the other is brown-eyed may be a difference between them, but it is not morally relevant to grading them.

Philosophers have shown that the standard reasons offered to exclude animals from the moral circle, and to justify not assessing our treatment of them by the same moral categories and machinery we use for assessing the treatment of humans, do not meet the test of moral relevance. Such historically sanctified reasons as "animals lack a soul," "animals do not reason," "humans are more powerful than animals," "animals do not have language," "God said we could do as we wish to animals" have been demonstrated to provide no rational basis for failing to reckon with animal interests in our moral deliberations. For one thing, while the above statements may mark differences between humans and animals, they do not mark *morally relevant differences* that justify harming animals when we would not similarly harm people. For example, if we justify harming animals on the grounds that we are more powerful than they are, we are essentially affirming "might makes right," a principle that morality is in large measure created to overcome. By the same token, if we are permitted to harm animals for our benefit because they lack reason, there are no grounds for not extending the same logic to non-rational humans, as we shall shortly see. And while animals may not have the same interests as people, it is evident to commonsense that they certainly do have interests, the fulfillment and thwarting of which matter to them.

The interests of animals that are violated by research are patent. Invasive research such as surgical research, toxicological research, and disease research certainly harm the animals and cause pain and suffering. But even non-invasive research on captive animals leads to pain, suffering, and deprivation arising out of the manner in which research animals are kept. Social animals are often kept in isolation; burrowing animals are kept in stainless steel or polycarbonate cages; and, in general, animals' normal repertoire of powers and coping abilities – what I have elsewhere called their *teloi* or natures (Rollin 1982) – are thwarted. Indeed, Dr Tom Wolfle, a leading laboratory animal veterinarian and animal behaviorist at the US National Academy of Science, has persuasively argued that animals used in research probably suffer more from the ways in which they are kept for research than from the invasive manipulation they are exposed to within research.

The common moral machinery that society has developed for adjudicating and assessing our treatment of people would not allow people to be used in invasive research without informed consent, even if great benefit were to accrue to the remainder of society from such use. This is the case even if the people being used were so-called "marginal humans" – infants, the insane, the senile, the retarded, the comatose, etc. A grasp of this component of our ethic has led many philosophers to argue that one should not subject an animal to any experimental protocol that society would not be morally prepared to accept if performed on a retarded or otherwise intellectually disabled human.

There appears in fact to be no morally relevant difference between intellectually disabled humans and many animals – in both cases, what we do to the being in question

matters to them, as they are capable of pain, suffering, and distress. Indeed, a normal, conscious, adult non-human mammal would seem to have a far greater range of interests than a comatose or severely retarded human, or even than a human baby.

While we do indeed perform some research on marginal humans, we do not do so without as far as possible garnering their consent and, if they are incapable of giving consent, obtaining consent from guardians specifically mandated with protecting their basic interests. Applying such a policy to animals would forestall the vast majority of current research on captive animals, even if the bulk of such research is non-invasive, given the considerations detailed above concerning the violations of animals' basic interests as a consequence of how we keep them. Steve Sapontzis has further pointed out that we do have a method for determining whether an animal is consenting to a piece of research – open the cages! (Note that an animal's failure to leave the cage would not necessarily assure consent; it might merely demonstrate that a condition like learned helplessness has been induced in the animal.)

The above argument, extrapolated from ordinary moral consciousness, applies even more strongly to the case of animals used in psychological research, where one is using animals as a model to study noxious psychological or psychophysical states that appear in humans – pain, fear, anxiety, addiction, aggression, etc. For here one can generate what has been called the psychologist's dilemma: if the relevant state being produced in the animal is analogous to the same state in humans, why are we morally entitled to produce that state in animals when we would not be so entitled to produce it in humans? And if the animal state is not analogous to the human state, why create it in the animal?

The Uses of Animals in Research

Before examining the response of the animal-using research community to the moral critique presented, it is worth pausing to examine the various ways in which animals are used in research. The different usages are fairly well accounted for by the following seven categories:

1 Basic biological, behavioral, or psychological research – that is, the formulation and testing of hypotheses about fundamental theoretical questions, such as the nature of DNA replication, mitochondrial activity, brain functions, or learning, with little concern for the practical effect of that research.
2 Applied basic biomedical and psychological research – the formulation and testing of hypotheses about diseases, dysfunctions, genetic defects, etc., which, while not necessarily having immediate consequences for treatment of disease, are at least seen as directly related to such consequences. Included in this category is the testing of new therapies: surgical, gene therapy, radiation treatment, treatment of burns, etc. Clearly there will be a spectrum, rather than a clear-cut cleavage, between categories 1 and 2.
3 The development of drugs and therapeutic chemicals. Again, this differs from the earlier categories (especially category 2) by degree, but is primarily distinguished by what might be called a "shotgun" approach; that is, the research is guided not

so much by well-formulated theories that suggest that a certain compound might have a certain effect but, rather, by hit-and-miss, exploratory, inductive "shooting in the dark." The primary difference between this category and the others is that here one is aiming at discovering specific substances for specific purposes, rather than at knowledge per se.

4 Food and fiber research, aimed at increasing the productivity and efficiency of agricultural animals. This includes feed trials, metabolism studies, some reproductive work, and the development of agents like BST to increase milk production.

5 The testing of various consumer goods for safety, toxicity, irritation, and degree of toxicity. Such testing includes the testing of cosmetics, food additives, herbicides, pesticides, and industrial chemicals, as well as the testing of drugs for toxicity, carcinogenesis (production of cancer), mutagenesis (production of mutations in living bodies), and teratogenesis (production of monsters and abnormalities in embryo development). To some extent, this category will overlap with category 3, but it should be distinguished in virtue of the fact that (3) refers to the discovery of new drugs, and (4) to their testing for human – and, in the case of veterinary drugs, animal – safety.

6 The use of animals in educational institutions and elsewhere for demonstration, dissection, surgery practice, induction of disease for demonstrative purposes, high-school science projects, etc.

7 The use of animals for extraction of drugs and biological products – vaccines, blood, serum, monoclonal antibodies, TPA from animals genetically engineered to produce it in their milk, etc.

Approximately three million animals are used in experiments in Britain each year. In the US, no precise figures are available, as no records are kept of rats, mice, and birds, all of which are exempt from the Animal Welfare Act, even though rats and mice constitute the majority of animals used in research. US estimates range from 20 million up.

The Response of the Research Community to the Moral Critique of Animal Research

Unfortunately for rational moral progress, the research community has had a historical tendency not to engage the moral challenge to animal research, but to sidestep it. Until the mid-1980s, it was not uncommon to hear scientists affirm that "animal use is not a moral issue, it is a scientific necessity."

The primary reason for researchers taking such a position, a view that in fact flew in the face of social morality, lies in what I have elsewhere called scientific ideology, or the commonsense of science, which is to scientific activity what ordinary commonsense is to everyday life (Rollin 1989; 2006a). Scientific ideology is the set of assumptions and presuppositions taught to nascent scientists as indisputable fact rather than debatable assumptions, along with the data germane to their particular disciplines.

The origin of this ideology lies in the understandable desire to separate science from speculative philosophy and unverifiable notions like "life force," "entelechies,"

absolute space, and time and ether, which were plentiful in science at the end of the nineteenth century. Fueled by the advent of a philosophical movement known as logical positivism, scientific ideology stressed an aspect of modern science prominent since Newton – namely, that only claims that can be directly verified by experience or experiment can be legitimately admitted into science.

The effect of this approach on the issue of animal research was profound. In the first place, scientific ideology banished ethical and other value issues from the legitimate purview of science, as moral judgments could not be proven empirically. The result was an almost universal adherence among scientists to the dogma that science was "value-free" and could not and did not deal with ethical issues in science. Under the influence of positivism, ethical judgments were perceived as exclusively emotive and, as such, they could not be rationally engaged. The fact that many if not most animal advocates couched their opposition to animal research in highly emotional terms further convinced researchers that ethics was simply emotion, and that opposition to animal research on moral grounds needed to be met with emotional appeals based in vivid accounts of human suffering from disease, and the threat to human health that would be occasioned by even regulating animal research, let alone abolishing it.

A second component of scientific ideology strongly buttressed the denial of ethics in science. This involved agnosticism about the ability of science to study or even know the existence of consciousness in humans or animals. Rooted in the positivistic commitment to allowing only the observable and testable into science, this component expressed itself in the United States and Britain as behaviorism, the movement in psychology which eschewed talk of mental states, and allowed as scientifically legitimate only the study of overt behavior. The logic of this position can be reconstructed as follows: one should allow into science only what is intersubjectively observable. Mental states are not intersubjectively observable. Therefore mental states are not scientifically able to be studied. Therefore mental states are not scientifically real. Therefore mental states are not of concern to scientists. Felt pain in animals (as opposed to the physiological substratum or machinery of pain) is a mental state. Therefore felt pain in animals is neither scientifically real nor of concern to scientists. (Although this same logic would naturally apply to humans, and behaviorists in fact denied the cogency of talking about consciousness in people, they were clearly unable to act on this ideology in their dealings with humans, since people would hardly accept the claim that their pain was not real.)

It is probably for the above set of reasons that there are fewer works defending the use of animals in research than criticizing it. One book, *The Case for Animal Experimentation* by Michael A. Fox, which did attempt to provide a systematic justification for animal use in research, was repudiated by its author within months of publication. Nonetheless, there are certain arguments that are frequently deployed by defenders of animal research.

The argument from benefits

Research on animals has been intimately connected with new understanding of disease, new drugs, and new operative procedures, all of which have produced significant benefits for humans and for animals. These significant results and their attendant benefits

would have been unobtainable without animal use. Therefore animal research is justified.

Critics of animal research might (and do) attack the argument above in two ways. First of all, one may question the link between premises and conclusion. Even if significant benefits have been garnered from invasive animal use, and even if these benefits could not have been achieved in other ways, it does not follow that such use is justified. Suppose that Nazi research on unwilling humans produced considerable benefits, for example, as some have argued, in the areas of hypothermia and high-altitude medicine. It does not follow that we would consider such use of human subjects morally justifiable. In fact, of course, we do not. Indeed, there are significant numbers of people in the research community who argue that the data from such experiments should never be used or even cited, *regardless of how much benefit flows from its use*.

The only way for defenders of animal research to defeat this counter-argument is to find a morally relevant difference between humans and animals that stops our extending our consensus ethic's moral concern for human individuals to animals.

Second, one can attack the argument from benefits in its second premise, namely that the benefits in question could not have been achieved in other ways. This is extremely difficult to prove one way or the other, for the same reasons that it is difficult to conjecture what the world would have been like if the Nazis had won World War II. We do know that, as social concern regarding the morality of animal research mounts, other ways are being found to achieve many of the ends listed in our discussion of the uses of animals in research.

The argument that moral concerns of the sort required to question animal research apply only to humans

This approach is, in essence, an attempt to provide what we indicated was necessary to buttress the argument from benefits. Such an attempt was made by Carl Cohen in a *New England Journal of Medicine* article (1986) generally considered by the research community to be the best articulation of their position.

One of Cohen's chief arguments can be reconstructed as follows (the argument is specifically directed against those who would base condemnation of animal research on the claim that animals have rights, but can be viewed as applying to our earlier version of the general argument against invasive animal use). Only beings who have rights can be said to have sufficient moral status to be protected from invasive use in research. Animals cannot reason, respond to moral claims, etc. – necessary conditions for being rights-bearers. Therefore they cannot morally be said to be protected from invasive use.

The problems with this argument are multiple. In the first place, even if the concept of a right (or of sufficient moral status to protect one from being used cavalierly for others' benefit) arises only among rational beings, it does not follow that its use is limited to such beings. Consider an analogy. Chess may have been invented solely for the purpose of being played by Persian royalty. But given that the rules have a life of their own, anyone can play it, regardless of the intention of those who created the rules. Similarly, rights may have arisen in a circle of rational beings. But it doesn't follow that such rational beings cannot reasonably extend the concept to beings with other

morally relevant features. In fact, that is precisely what has occurred in the extension of rights to marginal humans.

To this, Cohen replies that such extension is legitimate since marginal humans belong to a kind that is rational, while extension to animals is not. The obvious response to this, however, is that, by his own argument, it is being rational that is relevant, not belonging to a certain kind. Further, if his argument is viable, and one can cavalierly ignore what is by hypothesis the morally relevant feature, one can turn it around on Cohen. One could argue in the same vein that, since humans are animals, albeit rational ones, and other animals are animals, albeit non-rational ones, we can ignore rationality merely because both humans and animals belong to the same kind (i.e., animal). In short, his making an exception for non-rational humans fails the test of moral relevance and makes arbitrary inclusion of animals as rights-bearers as reasonable as arbitrary inclusion of non-rational humans.

Another attempt to provide a morally relevant difference to undercut the argument against invasive animal use is provided by those who argue that scientific ideology is correct and that animals are incapable of pain, suffering, and other morally relevant mental states. Such a neo-Cartesian stance has recently been revived by Peter Carruthers and Peter Harrison, and in essence questions the claim that what we do to animals matters to them.

A detailed exposition of and response to such a strategy is impossible to undertake here. (Evelyn Pluhar (1995) has engaged this task in *Beyond Prejudice*.) However, the following points can be sketched. First, a heavy burden of proof exists for those who would convince commonsense and common morality that animals are merely machines. Even the anti-cruelty ethic took animal pain for granted. Second, such a position would make the appearance of pain and other modes of awareness in humans an evolutionary miracle. Third, the neurophysiological, neurochemical, and behavior evidence militates in favor of numerous similar morally relevant mental states such as pain in humans and animals. Fourth, if animals are truly just machines, devoid of awareness, much scientific research would be vitiated, for example, pain research conducted on animals and extrapolated to people.

One possible way to exclude animals from direct moral status, and thereby justify invasive research on them, is a philosophically sophisticated exposition of the claim we discussed above by Cohen that morality applies only to rational beings. This position, which has its modern roots in Hobbes but in fact was articulated even in antiquity, was more recently thrust into prominence by the work of John Rawls. It has been directly applied to the question of animals' moral status by Peter Carruthers, who was mentioned above as advancing the neo-Cartesian argument, in his book *The Animals Issue* (1992). Interestingly enough, Carruthers's contractual argument is independent of his denial of consciousness to animals. Even if animals are conscious and feel pain, Carruthers believes that the contractual basis for morality excludes animals from the moral status necessary to question the moral legitimacy of experimentation on them.

According to Carruthers, morality is a set of rules derived from what rational beings would rationally choose to govern their interactions with one another in a social environment, if given a chance to do so. Only rational beings can be governed by such rules, and adjust their behaviors toward one another according to them. Thus, only rational

beings, of which humans are the only example, can "play the game of morality," so only they are protected by morality. Animals thus fall outside the scope of moral concern. The only reasons for worrying about animal treatment are contingent ones, namely that some people care about what happens to animals, or that bad treatment of animals leads to bad treatment of people (as Thomas Aquinas argued), but nothing about animals in themselves is worthy of moral status. Further, the above contingent reasons for concern about animal suffering do not weigh heavily enough to eliminate research on animals.

There is a variety of responses to Carruthers. In the first place, even if one concedes the notion that morality arises by hypothetical contract among rational beings, it is by no means clear that the only choices of rules such beings would make would be to cover only rational beings. They might also decide that any rules should cover any beings capable of having negative or positive experiences, whether or not they are rational. Second, even if rational beings intend the rules to cover only rational beings, it does not follow that the rules do not have a logic and life of their own that lead to adding other beings to the circle of moral concern, as indeed seems to be happening in social morality today. Third, Carruthers seems to assume that according moral status to animals entails that the status be equal to that of humans, "yet," he says, "we find it intuitively abhorrent that the lives and suffering of animals should be weighed against the lives or suffering of human beings" (1992: 195). But it is not at all clear that contractualism, even if true, could not accord animals sufficient moral status to prohibit experimenting on them, yet not say they were of equal moral value to normal humans. Further, as Sapontzis (1993) has pointed out, Carruthers's argument is circular. He justifies such uses as research on animals by appeal to contractualism, and justifies contractualism on the grounds that it renders morally permissible such uses as research on animals.

The argument from experimenting on marginal humans

The final defense of research on animals that we shall consider is the utilitarian one advanced by R. G. Frey (1983). Unlike the previous arguments, it is a tentative one, offered up in a spirit of uneasiness.

Frey's argument essentially rests upon standing the argument from marginal humans on its head. Recall that this argument says that animals are analogous to such marginal humans as the retarded, the comatose, the senile, the insane, etc. Since we find experimenting on such humans morally repugnant, we should find experimentation on animals equally repugnant.

Frey's argument reaffirms the analogy, but points out that, in actual fact, many normal animals have richer and more complex lives, and thus have *higher-quality* lives, than many marginal humans do. The logic of justifying research on animals for human benefit (which assumes that humans have more complex lives than animals, and thus more valuable lives) would surely justify doing such research on marginal humans who both have lower qualities of life than some animals do and who are more similar physiologically to normal humans, and are thus better research "models." If we are willing to perform such research on marginal humans, we are closer to justifying similar research on animals.

Obviously, the force of Frey's argument as a defense of research depends upon our willingness relentlessly to pursue the logic by which we (implicitly) justify animal research and apply the same justification to using humans not different from those animals in any morally relevant way. As Frey himself affirms, there are some "contingent" (i.e., not logically necessary) effects of deciding to do research on marginal humans as well as on animals that would work against such a decision. He cites the emotional (rather than rationally based) uproar and outrage that would arise (because people have not worked through the logic of the issue), and presumably such other responses as the knee-jerk fear of a slippery slope leading to research on normal humans. But, in the end, such psychological rather than moral/logical revulsion could conceivably be overcome by education in and explanation of the underlying moral logic.

I believe that Frey's argument fails as a defense of research and ends up serving those who originally adduced the argument from marginal humans as a *reductio against* research on animals. If people do see clearly and truly believe that doing research on animals is (theology aside) exactly morally analogous to doing research on marginal humans, they are, in our current state of moral evolution, likelier to question the former than accept the latter. In fact, in my 30 years of working with scientists and animal researchers of all sorts, I have found that the overwhelming majority of them do not, if pressed, feel morally justified in doing research on animals, but tend to focus on the benefits produced and simply ignore the moral perspective, a tack much aided by the scientific ideology described above.

The only argument in defense of animal research that seems at all cogent is the argument from benefits discussed above. A utilitarian thinker might argue that with regard to animal subjects or human subjects utilized in research, even invasive research, such research is justified if the benefits to sentient beings, humans or animals, outweighs the cost to the subjects. Peter Singer, for example, a consistent utilitarian, has, in a televised interview, agreed that certain invasive neurological research on non-human primates might be justified if it is the case that, as the researchers allege, the health of a large number of humans has markedly improved as a result of that research, and that outcome could be attained in no other way.

Our societal ethic, embedded in our laws, does not of course accept such an argument, and checks a purely utilitarian ethic by use of the deontological notion of rights, protecting individual humans from having their basic interests infringed upon even for the sake of the general welfare. Hence, as we said earlier, society roundly condemned Nazi research that was scientifically and medically valuable, such as hypothermia and high altitude medical research along with the patently useless research performed by Josef Mengele.

For the sake of argument, in order to illustrate another moral problem in animal research, let us assume that invasive animal research is justified only by the benefit produced. It would then seem to follow that the only morally justifiable research would be research that benefits humans and/or animals. But there is in fact a vast amount of research that does not demonstrably benefit humans or animals. Much behavioral research, weapons research, and toxicity testing as a legal requirement are obvious examples, as is much of basic research which is invasive but has no clear benefit. Obviously a certain amount of research meets that test, but a great deal does not. Someone might

respond that "we never know what benefits might emerge in the future," and appeal to serendipity or unknowns. But if that were a legitimate point, we could not discriminate in funding between research likely to produce benefit and that unlikely to do so; yet we do. If we appeal to unknown but possible benefits, we are literally forced to fund everything – which we do not. We do in fact weigh expected cost versus benefit in human and animal research; why not weigh cost to the animal subject as a relevant parameter?

Thus we find a second major moral issue in animal research (which, along with the first issue, is discussed more fully in Rollin 2007). To recapitulate: the first issue arises from the suggestion that any invasive research on an object of moral concern is morally problematic. In response, researchers invoke the benefits of research. Even assuming this is a good argument in principle, it gives rise to another moral issue: why do we not do only animal research that clearly produces more benefit than cost, allowing for the cost to the animals? So even if we disregard the general point about the morality of invasive animal research, we are still left with the fact that much animal research does not fit researchers' own moral justification for it. I have referred in other writings to this moral claim about justifying invasive research by appeal to benefits as the "Utilitarian Principle" – if one accepts the benefit argument, we are left with the conclusion that the only justifiable animal research is that which is expected to produce results yielding more benefit than harm (however this is measured).

Thus, even if we retreat to the utilitarian argument in moral defense of invasive animal research, we find that a good deal of such research fails to meet that criterion. But this is not all; yet another ethical issue arises. Suppose we ignore the cost-benefit criterion discussion, as well as the first argument questioning the morality of all invasive animal research, which is, of course, what we do in practice. Would it not then at least be morally required that we treat the animals in the best possible manner commensurate with their use in research? To put the question another way, are research animals given the best possible treatment they could get while being used in research? Regrettably, the answer is "no," as one can easily demonstrate, both historically and in the present.

The demand that if we do use animals in invasive research, we at least do our best to meet their interests and needs, minimize their suffering as much as possible, and respect their *telos* seems to be a requirement of common decency, particularly if we are using them in a way that ignores the moral problems recounted thus far. Sadly, this is not the case.

Historically, in the US at least, basic animal care was a very low priority in animal research, ironically harming the science by failing to control pain, stress, and other variables, and very much failing to meet the ideal set forth in the third set of moral issues just enumerated. Ordinary commonsense would dictate that one of the worst things one can do to a research animal is to cause unrelieved pain to it. Since animals do not understand sources of pain, particularly the sort of pain inflicted in experiments, they cannot rationalize "this will end soon"; they cannot anticipate its cessation, so their whole life becomes the pain. This insight has led veterinary pain specialist Ralph Kitchell to surmise that animal pain may be worse than human pain (Kitchell and Guinan 1989); as I have put it, humans have *hope*. Further, pain is a stressor, and can skew the results of experiments in numerous ways. Thus, for both moral and scientific reasons, one would expect pain control to be a major emphasis when scientists undertook

painful experiments. If someone were conducting fracture research, for example, one would thus expect liberal use of pre-emptive and post-surgical or post-traumatic analgesia, since the pain is not the point of the experiment, and unmitigated pain actually retards healing. Yet a literature search conducted in 1982 revealed that only two papers existed on animal analgesia, and none specifically devoted to laboratory animal analgesia. Fortunately the 1985 laws mandated control of pain and distress, and the literature on, and practice of, pain control have proliferated since.

As important as the infliction of pain and suffering, which only sometimes arises in research, is the fact that 100 percent of the animals utilized in research have the basic needs and interests flowing from the biological and psychological needs constituting their natures thwarted by how we keep them.

Practical Resolution

Whatever the ultimate socio-ethical resolution to the question of the moral legitimacy of research on animals turns out to be, it is clear that the arguments against such use have captured a significant moment in social thought, and have helped accelerate the development of an ethic in society that goes well beyond concern about cruelty to concern about all animal suffering, regardless of source. This has in turn resulted in the passage of major legislation in the United States, Britain, and elsewhere regulating animal research. In my view, law is, in Plato's phrase, social ethics "writ large." While Britain has had a 100-year history of such regulation, the passage of the US laws in 1985 is especially significant, both because research there had essentially hitherto enjoyed a laissez-faire status and because the legislation was vigorously opposed by the research community, which warned of significant danger to human health if it were passed.

The US laws of 1985 can be summarized as follows: The amendment to the Animal Welfare Act specifies:

1 Establishment of an institutional animal care committee to review prospective research proposals, monitor animal care and use, and to inspect facilities. Members must include a veterinarian and a person not affiliated with the research facility.
2 Standards for exercise of dogs are to be promulgated by the Secretary of Agriculture.
3 Standards for a physical environment, which promotes "the psychological well-being of primates," are to be promulgated.
4 Standards for adequate veterinary care, including use of anesthetics, analgesics, and tranquilizers, are to be promulgated. The control and minimization of pain and suffering is emphasized.
5 No paralytics are to be used without anesthetics.
6 Alternatives to painful procedures must be considered by the investigator.
7 Multiple surgery is prohibited except in cases of "scientific necessity."
8 The Animal Care Committee must inspect all facilities semi-annually, review practices involving pain, review the conditions of animals, and file an inspection report detailing violations and deficiencies. Minority reports must also be filed.

9 The Secretary of Agriculture is directed to establish an information service at the National Agricultural Library, which provides information aimed at eliminating duplication of animal experiments, reducing or replacing animal use, minimizing animal pain and suffering, and aiding in training animal users.
10 The facility must provide for training for all animal users and caretakers.

The second bill passed was called the NIH Reauthorization Act, or the Health Research Extension Act, and basically made NIH Guidelines, hitherto cavalierly ignored, into law. This law, which complemented the Animal Welfare Act amendment, covered all vertebrate animals, while the former exempted rats, mice, and birds from coverage. Violation of the second law can result in seizure of all federal research funding to an institution, and this was the major sanction for these new policies.

New laws and policies have been forthcoming in numerous other countries based on the increased societal concern for the treatment of laboratory animals. Many are variations on the Animal Care and Use Committee protocol review concept; such laws obtain in Australia and New Zealand. Canada has not legislated, but adherence to such principles is presuppositional to government research funding. In Europe, 19 countries utilize the ethical review system: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Spain, Sweden, and Switzerland (Smith et al. 2007). The UK also deploys institutional review, but it is a recent superimposition upon a complex system of licensure and inspectors that goes back to 1876 and was considerably revised in 1986.

In addition to generating law, the emerging ethic has led to the abandonment of some frivolous research animal use, for example, some of the uses of animals in cosmetic testing; the elimination of many invasive and brutalizing laboratory exercises in undergraduate, graduate, medical, and veterinary curricula; and the development of new ways to teach surgery, for example, by way of spay-neuter clinics, cadavers, and models for teaching manual skills. Increasing numbers of scientific journals are refusing to publish manuscripts detailing research where severe pain and suffering were involved. And there is far more serious effort than ever before across the scientific community to consider alternatives to animal use, be these a *reduction* of numbers of animals, *refinement* of painful procedures (e.g., substituting a terminal procedure for a painful one), or *replacement* of animals by various modalities (e.g., cell culture, tissue culture, or epidemiology).

In my view, there is a new and serious moral issue associated with animal research that has not received sufficient attention. This arises from the advent of genetic engineering technology. By use of this technology, one can create animal "models" for the thousands of gruesome human genetic diseases hitherto not able to be studied in animals. Since many of these diseases involve symptoms of great severity, yet the research community is embracing the creation of such models, a new and significant source of chronic animal suffering is developing. The issue is worsened by virtue of the fact that few modalities exist for controlling chronic pain and suffering. Unfortunately, this issue has hitherto occasioned little discussion.

In my view, new laws and, more importantly, the growing societal concern for animals that drove their passage have had salubrious consequences for the moral

status of animals in research. For one thing, they vividly underscore the fact that society sees invasive animal research as a significant moral issue. For another, they explode the scientific ideology which we have seen precludes ethical engagement by animal research scientists with the issues their activities engender. Finally, they have led to what I call the "reappropriation of commonsense" with regard to the reality and knowability of animal suffering, and the need for its control. One can be guardedly optimistic that animal research will evolve into what it should have been all along – a moral science.

References

Arkow, P. (1994). Child abuse, animal abuse, and the veterinarian. *Journal of the American Veterinary Medical Association* 204: 1004–6.

Carruthers, P. (1992). *The Animals Issue: Moral Theory in Practice.* New York: Cambridge University Press.

Cohen, C. (1986). The case for the use of animals in biomedical research. *New England Journal of Medicine* 315: 865–9.

Fox, M. A. (1986). *The Case for Animal Experimentation.* Berkeley: University of California Press.

Frey, R. G. (1983). Vivisection, morals and medicine. *Journal of Medical Ethics* 9: 94–7.

Harrison, P. (1989). Theodicy and animal pain. *Philosophy* 64 (January): 79–92.

Kellert, S. and Felthous, A. (1985). Childhood cruelty toward animals among criminals and non-criminals. *Human Relations* 38: 1113–29.

Kitchell, R. and Guinan, M. (1989). The nature of pain in animals. In B. E. Rollin and M. L. Kesel (eds.), *The Experimental Animal in Biomedical Research*, vol. I. Boca Raton, FL: CRC Press, pp. 185–205.

Pluhar, E. B. (1995). *Beyond Prejudice*. Durham, NC: Duke University Press.

Regan, T. (1983). *The Case for Animal Rights.* Berkeley: University of California Press.

Rollin, B. E. (1982). *Animal Rights and Human Morality*. Buffalo, NY: Prometheus Books (rev. edns. 1992 and 2006).

Rollin, B. E. (1989). *The Unheeded Cry: Animal Consciousness, Animal Pain and Science.* Oxford: Oxford University Press.

Rollin, B. E. (1995). *The Frankenstein Syndrome: Ethical and Social Issues in the Genetic Engineering of Animals.* New York: Cambridge University Press.

Rollin, B. E. (2006a). *Science and Ethics*. New York: Cambridge University Press.

Rollin, B. E. (2006b). The regulation of animal research and the emergence of animal ethics: a conceptual history. *Theoretical Medicine and Bioethics* 27/4: 285–304.

Rollin, B. E. (2007). Animal research: a moral science. *EMBO Reports* 8/6: 521–5.

Sapontzis, S. (1987). *Morals, Reason and Animals.* Philadelphia: Temple University Press.

Sapontzis, S. (1990). The case against invasive research with animals. In B. E. Rollin and M. L. Kesel (eds.), *The Experimental Animal in Biomedical Research*, vol. I. Boca Raton, FL: CRC Press, pp. 3–19.

Sapontzis, S. (1993). Review of *The Animals Issue. Canadian Philosophical Reviews* 13/4: 40–2.

Singer, P. (1975). *Animal Liberation.* New York: Avon Books.

Smith, J. A. et al. (2007). Principles and practice in ethical review of animal experiments across Europe: Summary of the report of a FELASA working group on ethical evaluations of animal experiments. *Laboratory Animals* 41/2: 143–60.

Further reading

Baird, R. M. and Rosenbaum, S. E. (eds.) (1991). *Animal Experimentation: The Moral Issues.* Buffalo, NY: Prometheus Books.

Rollin, B. E. (1985). The moral status of research animals in psychology. *American Psychologist* (August): 920–6.

Rollin, B. E. (1990). Ethics and research animals – theory and practice. In B. E. Rollin and M. L. Kesel (eds.), *The Experimental Animal in Biomedical Research*, vol. I. Boca Raton, FL: CRC Press, pp. 19–37.

Rollin, B. E. (1995). Laws relevant to animal research in the United States. In A. A. Tuffery (ed.), *Laboratory Animals*, 2nd edn. London: John Wiley, pp. 67–87.

Rowan, A. N. (1984). *Of Mice, Models, and Men.* Albany, NY: SUNY Press.

Russell, W. M. S. and Burch, R. L. (1959). *Principles of Humane Experimental Technique*. London: Methuen.

Smyth, D. H. (1978). *Alternatives to Animal Experiments.* London: Scholar Press.