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Animal Research: A Moral Science

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Historically, the scientific community—at least in the USA—did not perceive the use of animals in research as an ethical issue. Anyone who raised questions about the way animals were kept and treated during experiments ran the risk of being stigmatized as an antivivisectionist; a misanthrope preferring animals to people; or an ingrate who did not value the contributions of biomedical science to human health and well-being. I received a full barrage of such charges when I drafted and promoted what eventually became two US federal laws to protect laboratory animals: the 1985 Health Research Extension Act and an ‘Animal Welfare’ amendment to the 1985 Food Security Act. Indeed, a reviewer of my book *Animal Rights and Human Morality* (Rollin, 1981)—in which I argue for elevating the moral status of animals and codifying that status into law for laboratory animals—wrote that I “exonerate the Nazis” by comparing the killing of animals for science with the Holocaust, and that the book gives “a false cloak of morality” to attacks on research laboratories (Visscher, 1982).

To be fair, anti-vivisectionists were not much more sophisticated at the time—conceptually or morally. The day after I received the published review, abolitionists criticized the book, castigating me for accepting the reality of science, and scolding me for proposing regulations that would result in short-term improvements for animals, thereby retarding the complete abolition of animal research.

My own experience of being vilified as ‘anti-science’ by the scientific community has been reflected in societal debates on animal research. Although abolitionists argue that using animals in biomedical research produces no benefits for humans, the scientific community has adopted an equally extreme position. The Foundation for Biomedical Research—a non-profit organization in Washington, DC, USA—produced a film in 1984 entitled *Will I Be All Right, Doctor?*. The query in the title is uttered by a frightened child before undergoing surgery; the physician’s response is that he will be all right if antivivisectionist extremists let scientists get on with their animal testing. When I attended the premiere of the film at the annual meeting of the American Association for Laboratory Animal Science in 1984, before a putatively friendly audience of laboratory animal veterinarians, the only comment came from an attendee who said that he was ashamed to be associated with something pitched lower than the worst anti-vivisectionist propaganda.

Such extreme responses to the anti-vivisection movement date back to the famed physiologist Walter Cannon in the early twentieth century. A background note to a collection of Cannon’s writings from 1905 to 1928, produced by the American Philosophical Society, states that “the most vocal defenders of vivisection often argued against all forms of outside interference in medical education and research. They opposed not only the abolition of the use of animals, but even its regulation, maintaining that any concession on their part would lead to dire consequences for medical science” (Cannon, 2000). Little changed after Cannon’s writings and before the passage of the US federal laws in 1985. In the decade between 1975 and 1985, I searched scientific journals for reasoned defences of invasive research on animals and found none. What I did find were variations on the theme orchestrated in the film described above. How can we explain this blind spot in what is an otherwise sophisticated and informed community?

In various publications, I have described what I call scientific ideology: a set of basic, uncriticized assumptions about twentieth-century science (Rollin, 2006). In general, ideologies operate in many different areas: religious, political, sociological, economic and ethnic. Therefore, it is not surprising that an ideology about science would emerge—after all, science has been the dominant method of generating knowledge in Western societies since the Renaissance. The ideology underlying modern—post-medieval—science has grown and evolved along with science itself. An important component of that ideology is a strong positivistic tendency, which is still dominant today, to believe that true science must be based on experience only, because the tribunal of experience is the objective, universal judge of what really happens in the world.

If one asks most working scientists what separates science from religion, speculative metaphysics or shamanistic worldviews, they would reply without hesitation that it is an emphasis on validating claims through experience, observation or experiment. This component of scientific ideology can be traced back to Isaac Newton, who proclaimed that he did not feign hypotheses (*'hypotheses non fingo'*) but operated directly from experience. The fact that Newton operated with non-observable ideas such as gravity or, more generally, action at a distance and absolute space and time, did not stop him from issuing an ideological proclamation that one should not do so.

This insistence on experience as the foundation for scientific research persists today, where it reaches its most philosophical articulation in the reductionistic movement known as logical positivism, which was designed to exclude the unverifiable from science. A classic and profound example of this attitude is Albert Einstein's rejection of Newton's concepts of absolute space and time on the grounds that such talk was not testable. Other targets of positivists' criticisms are Henri-Louis Bergson's hypothesis of a life force (*élan vital*) as separating the living from the non-living, and the embryologist Hans Driesch's postulation of 'entelechies' to explain regeneration in starfish.

Although logical positivism took many subtly different and varied forms, the message, as received by working scientists and passed on to students including myself, was that proper science should not tolerate unverifiable statements. This was strengthened further by the British philosopher and logical positivist Sir Alfred Jules Ayer's vastly popular and aggressively polemical book *Language, Truth, and Logic* (Ayer, 1946); it was first published in 1936 and has remained in print ever since. Easy to read and highly critical of wool-gathering, speculative metaphysics and other 'soft' and ungrounded ways of knowing, the book was long used in introductory philosophy courses and, in many cases, represented the only contact with philosophy that aspiring young scientists—or even senior scientists—had.

Be that as it may, the positivist demand for empirical verification of all meaningful claims became a mainstay of scientific ideology from the time of Einstein to the present day. Through it, one could in good conscience dismiss religious or metaphysical claims or other speculative assertions not merely as false and irrelevant to science, but in fact as meaningless. Only what could be verified or falsified empirically was meaningful.

What does all this have to do with ethics? Quite a bit, as it turns out. The philosopher Ludwig Wittgenstein, who greatly influenced the logical positivists, once remarked that, if you took an inventory of all the facts in the universe, you would not find that killing is wrong (Wittgenstein, 1965). You cannot, in principle, test the proposition that killing is wrong—it can be neither verified nor falsified. Consequently, in Wittgenstein's view, ethical judgements are meaningless. From this, it was concluded that ethics—and all judgements regarding values rather than facts—are not part of the scientific universe. The slogan that I learned in my science courses in the 1960s, and which is still taught in too many places, is that science is value-free in general, and ethics-free in particular.

This denial of the relevance of ethics to science was taught both explicitly and implicitly. The widely used Keeton and Gould textbook on biological science—in what one of my colleagues calls the “throat-clearing introduction”, where the authors pay lip service to the scientific method and provide a bit of history and other ‘soft’ issues before getting down to biological details—declares that “science cannot make value judgments [or] moral judgments” (Keeton & Gould, 1986). In the same vein, Sylvia Mader’s textbook *Biology* asserts that “science does not make ethical or moral decisions” (Mader, 1987). The bottom line is that science might provide society with the facts relevant to making moral decisions, but it steers clear of any ethical debate.

That is not, however, the whole story. Positivist thinkers also felt compelled to explain why intelligent people feel inclined to make moral judgements. They argued that when people make assertions such as ‘killing is wrong’, they are only expressing revulsion. ‘Killing is wrong’ really expresses ‘Killing, yuck!’ rather than describing a particular state of affairs. Therefore, a debate over the alleged morality of capital punishment expresses revulsion or approval, and any debate we can engender is really about factual questions such as whether capital punishment acts as a deterrent against murder.

It is therefore not surprising that when scientists are drawn into discussions of ethical issues, they are as emotional as their opponents. The scientific ideology dictates that these issues are nothing but emotional; therefore, the idea of rational ethics is an oxymoron, and he who generates the most effective emotional response ‘wins’. This explains *Will I Be All Right, Doctor?*.

An ethical issue is one that challenges us to apply our concepts of right, wrong, good and bad to a new situation. Before the 1970s, US society had a very limited ethic for animal treatment—it prohibited deliberate, sadistic, overt, purposeless cruelty to animals. Under this definition, no regularly accepted use of animals in agriculture or research that was deemed “to minister to some of the necessities of man” (Colorado Supreme Court, 1896) could be prosecuted, no matter how much pain and suffering it caused. The cruelty ethic and the ensuing laws existed primarily to flush out sadists and psychopaths, who are known to begin inflicting pain and suffering on animals before ‘graduating’ to people. It is not surprising then, that with ‘cruelty’ being the only ethical tool available, opponents of animal research labelled researchers as cruel. Researchers, in turn, chafed at being grouped with psychopaths and were further alienated from approaching their critics rationally.

During the 1970s and 1980s, a growing amount of literature in moral philosophy finally provided a rational approach to the ethics of animal treatment. The first such book was Peter Singer’s *Animal Liberation* (1975), followed by my book *Animal Rights and Human Morality* (Rollin, 1981), Tom Regan’s *The Case for Animal Rights* (1983), and Steve Sapontzis’ *Morals, Reason, and Animals* (1987). These books all discuss animal research from the point of view of moral theory, and argue for a higher moral status for animals. In particular, I pointed out that excluding animals from our moral machinery or concepts could not be justified logically for two reasons.

First, there is no morally relevant difference between humans and animals that justifies excluding animals from what I call “the moral arena” or the full “scope of moral concern”. Just as skin colour or gender cannot morally justify discrimination against humans, certain beliefs about animals—for example, that they lack a soul, are ‘inferior’ to humans in power or evolution, and lack reason or language—cannot morally justify their exclusion.

Second, there are positive reasons for including animals in our “moral arena”. Most notably, what we do to animals matters to them—as Charles Darwin pointed out, they feel not only pain, but also the full range of emotions that feature in our moral deliberations about humans: fear, loneliness, boredom, frustration, anxiety and so forth (Darwin, 1896). In addition, following Aristotle, I called attention to the nature or *telos*

of an animal: the pigness of a pig; the dogness of a dog. Their *telos* can guide our ethical obligations to animals just as human nature guides us in establishing human rights.

When applied to animal research, this analysis has moral implications for invasive experiments. Our social ethic does not allow us to use humans invasively to advance our knowledge or cure human disease without their explicit and informed consent. General benefit does not surpass concern for the individual in Western democratic systems. Indeed, the US Bill of Rights forbids sacrificing the interests of individuals for the general good. Whether this logic would forbid the painless killing of animals for research is another open question, because it seems that animals do not have the cognitive abilities to value life for its own sake; however, applying our ethical machinery to hurting something—even an animal—against its will forces us to conclude that such behaviour is at least highly problematic.

At the very least, the arguments for including animals in the moral arena should give those engaged in invasive research reason to pause and think. The first issue that arises is what morally justifies hurting animals for human benefit—or even to benefit other animals—when we would not feel morally allowed to do so to humans, even though we have done so. The public decried Nazi medical experiments on concentration-camp inmates, even those that produced benefit, and equally condemned the US Tuskegee syphilis study during which doctors deliberately left African-American patients untreated to study the pathology of the disease. In response to the claim that humans can provide informed consent to participate in invasive experiments that benefit other humans, whereas animals cannot, Sapontzis has offered a very clever response: open the cages and we will know if they wish to participate.

Notwithstanding these arguments from philosophers and ethicists, little morally sound discussion has come from the research community. If one presses scientists for a response, it usually takes one of two forms: we are 'superior' to animals and can do as we wish; or invasive animal research is justified because it produces more benefit to humans and/or animals than harm to the animals. With respect to the first response, what does superior mean? Does it mean more powerful? If we follow that position, the mugger or rapist is justified in victimizing the weak, which is what much of ethics is designed to prevent. Does it mean intellectually superior? Why should that be morally relevant? Does it mean morally superior? If so, victimizing a sentient organism hardly shows moral superiority.

The second common reply is tendered in terms of cost compared with benefit. Apart from the fact that our consensus social ethic does not accept hurting the minority for the benefit of the majority, this argument is open to a much more practical point: let us assume that invasive animal research is justified only by the benefit produced. It would then seem 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 has not been shown to benefit humans or animals: much behavioural research, weapons research or toxicity testing as a legal requirement are obvious examples, but basic research also often has no clear benefits. Someone might respond that we never know what benefits might emerge in the future, and appeal to serendipity. But if that were a legitimate point, we could not discriminate between funding research likely to produce benefits and that unlikely to do so; however, we do. If we appeal to unknown but possible benefits, we are literally forced to fund everything, which we do not. Even if we disregard the general point about the morality of invasive animal research, we are still left with the fact that much of animal research does not fit with the researchers' own moral justification for it. If one accepts the benefit argument by appealing to utilitarian principles, we are left with the conclusion that the only justifiable animal research is that which produces more benefit than harm—however this is measured.

But this is not all: another moral problem arises. Suppose we ignore both the cost–benefit criteria and the argument questioning the morality of all invasive animal research, which is of course what we do in practice. Would it not then be morally required to treat the animals in the best possible manner

commensurate with their use in research? The demand that we 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 animals in a way that ignores the moral problems recounted thus far. Sadly, this is not the case.

When I helped to draft the 1985 federal laws for laboratory animals, I needed to know about the deficiencies in animal care to prove to US Congress the need for legislation, which was strongly opposed by much of the research community. What I found could easily be chronicled in a book, but I will restrict myself to two paradigmatic examples: pain control and housing.

Common sense would dictate that one of the worst things one can do to a research animal is to cause unrelieved pain. As animals do not understand sources of pain—particularly the sort of pain inflicted in experiments—they cannot rationalize that it will end soon, and their whole life becomes the pain. This insight has led veterinary pain specialists Ralph Kitchell and Michael Guinan (1989) to surmise that animal pain might be even worse than human pain; after all, humans have hope. Furthermore, pain is a source of stress, and can skew the results of experiments in numerous ways. Therefore, for both moral and scientific reasons, one would expect a crucial emphasis on pain control in painful experiments. If someone were conducting fracture research, for example, one would expect the liberal use of pre-emptive and post-surgical or post-traumatic analgesia— pain relief—because the pain is not the point of the experiment, and unmitigated pain actually impedes healing.

A central component of the 1985 legislation was to mandate control of pain in research animals. Although I knew anecdotally that pain control was essentially non-existent in research, Congress demanded that I prove it, as the vocal portion of the research community opposing the legislation proclaimed that pain was already being controlled—and they were a powerful political lobby. I did a literature search, and found only two papers on animal analgesia, and none on laboratory animal analgesia. Of the two papers, one said, in essence, that there should be pain control, whereas the other described, in one page, what very little was known. Fortunately, this convinced Congress to mandate the control of pain and distress. As I expected, the legislative mandate galvanized the research community, and a literature search today would uncover thousands of such articles.

In the same vein, many veterinarians, typically trained before the mid-1980s, still equate anaesthesia with chemical restraint or sedation. The first US textbooks of veterinary anaesthesia (Lumb, 1963; Lumb & Jones, 1973) do not mention pain control as a reason for anaesthesia—instead, it is used to keep the animal still to prevent injury to it or the researcher—and do not mention analgesia at all.

Some of the neglect of pain in animals dates back to the historical roots of veterinary medicine as ancillary to agriculture, which was concerned only with the economic and productive role of the animal, not its comfort. A 1906 textbook of veterinary surgery bemoans the failure of veterinarians to use anaesthesia even for surgery, with the episodic exception of the canine practitioner, whose clients presumably valued their animals enough in noneconomic terms to demand anaesthesia (Merillat, 1906).

In the end, the counter-intuitive denial of pain can again be traced back to scientific ideology. The same logic that barred talking about ethics similarly forbade talking about mental states. It was strengthened by the advent of behaviourism in the early twentieth century, which affirmed that, for psychology to become a real science, it needed to eschew discussions about or the study of mental states in humans or animals, and instead study only overt behaviour. This did not significantly affect moral treatment of humans, but certainly reinforced the legitimacy of ignoring pain in animals. The two components of scientific ideology—denial of ethics in science and denial of mental states—worked synergistically to the detriment

of laboratory animals and created a formidable barrier to the awareness of the ethical issues inherent in animal research, and the recognition of the pain and distress sometimes created in the process.

As important as reducing the infliction of pain and suffering, which arises only sometimes in research, is the fact that all animals used in research have basic needs and interests, stemming from their biological and psychological natures. It is for this reason that the initial drafts of the 1985 legislation mandated housing and husbandry to meet the nature of all research animals. Unfortunately, this portion of the law was not passed, but it nonetheless created an awareness of 'environmental enrichment' that can only benefit the animals.

In my view, new legislation and, more importantly, the growing societal concern for animals that enabled these laws, 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 sink the scientific ideology precluding ethical engagement by animal-research scientists. Finally, they have led to what I call the 'reappropriation of common sense' with regard to the reality 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.

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