

"Philosophical Foundations of Animal Experimentation and Its Critics,"
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Philosophical Foundations of Animal Experimentation and its Critics

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by
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I come before you today at the invitation of your Colloquium Chair, Professor Claes Lundgren. It was his thought that a colloquium session devoted to some of the foundational questions, or presuppositions, of animal might prove interesting. Such an examination may have several aims. 1) It provides an opportunity to reflect on and review together a common activity that, in the perceptions of some concerned fellow citizens and in the history of the discipline of physiology, has had some highly questionable periods and prima facie objectionable practices. 2) It allows us to become more articulate about what we do, that we may speak effectively on its behalf to our critics. 3) Similarly, it enables us to speak to the concerns of our students, both of medicine and of physiology, whom we may initiate into the uses of animals without clarifying to them our perceptions of those uses and their rationale and justification. 4) Finally, such a stock-taking may occasion our own self-evaluation of our practices, with a possible result being the improvement of those practices from a moral point of view. And I suppose that Professor Lundgren asked me to speak with some of those aims in mind.

As for my own orientation, perhaps a word or two is in order about what I conceive my tasks as a philosopher to be. First, my basic research methodology is (i) to construct the best arguments for both sides of an issue that I can; (ii) to poke at and prod those arguments so as to expose their underlying structures and hidden components as fully as I can; (iii) to examine critically the result of that process of analysis, identifying what appear to be weak or fallacious arguments and claims requiring further support. I engage in this activity because I believe it is useful in pursuit of all of those goals that I ascribed to the department in issuing an invitation to me to talk. I do note that, in pursuing this activity I may not come out at the end endorsing the received view of the department collectively or the views of individual faculty. All I can say at this point is that I follow the arguments to the conclusions, and not the conclusions to the arguments. In that regard, I am here to appraise some arguments, not to produce them. But if I have not come to praise Caesar, neither is it my intent to bury him. Enough preliminaries: to the arguments.

In a sense this discussion is an extension of some begun a couple of months ago and continuing through meetings preparing for a symposium for freshmen medical students held 15 days ago. That seminar focused on two questions: Ought we to use animals and humans in medical education and research? And, If so, how ought we to conduct and regulate that use? After sketching some answers to the first question, most of our discussion focused on the second. I propose to retrace our steps and flesh out the pro and con arguments over the first question as it pertains to the use of animals in research. There will, however, be considerable spin-off concerning the second question.

Several grounds have been advanced historically for excluding animals from

being direct objects of moral consideration. If successful, any one of these arguments would serve as a perfect justification for our treatment of animals in ways rather analogous to our treatment of plants, where the practices of cutting, grinding to a pulp, boiling alive, spraying with a variety of toxic chemicals, and eating bring few cries of protest on their behalf. On the other hand, if there emerges a pattern of flaws in these arguments, then we may be motivated to turn to the question of whether there are positive grounds for regarding non-human animals to be direct objects of moral consideration, and, if so, the extent to which that status limits what is morally permissible in the realm of animal experimentation.

A perhaps more instructive way of characterizing our inquiry is as one into claims for morally relevant differences between other animals and humans, differences that would justify differences in the ways we use animals in research from the ways in which we use humans in research. Let me first list a number of differences that have been claimed to hold, then review how those differences have been thought to be morally relevant.

1. Humans have souls; animals do not.
2. Humans experience pain and suffering; animals do not.
3. Humans stand at the apex of the evolutionary pyramid; animals stand below.
4. Humans have reason; animals do not.
5. Humans have language; animals do not.
6. Humans can engage in scientific reasoning and acquire universal knowledge; animals cannot.
7. Humans have an interest in living, in that they have life plans and projects; animals do not.

No doubt other differences have been identified and claimed to be relevant, but these are, as far as I know, the major ones both historically and in the current debates. Let us consider each in turn.

Humans have souls; animals do not. Therefore, only humans are objects of moral concern.

The traditional view would have it that the soul is relevant in that only creatures with immortal souls can experience in an afterlife punishment for wrongs committed, redress for wrongs suffered, and rewards for good works. But the argument is slippery: at least one Cardinal (Bellarmine) argued that since animals lacked souls and thus could not have wrongs redressed in an afterlife, they were objects of a moral concern for us and ought to be treated better than we treat one another! (Rollin, p. 6).

A more relevant point concerning the soul has recently been raised by another philosopher, James Nelson, who argues that our ordinary concept of death as an evil, a loss, or harm suffered by the deceased makes sense only if we suppose the survival and continued existence of some element of the deceased — that which is traditionally called the soul. If an animal lacks a soul, that would be relevant to the question of whether its death constitutes a loss for the animal. Formally put, his argument goes like this:

It is a necessary condition of “X being a harm to A” that A is, in some respect, worse off for receiving X than would have been the case had A not received X. Ditto, *mutatis mutandis*, for “X being a benefit to A.” It is a necessary condition for A’s being worse off than A would otherwise be that A exists. Ditto for “better

off.” Death is either (a) the continued survival of an individual in some (permanently) altered state, or (b) the annihilation of that individual. If (a), then death is a harm or benefit to A if and only if the character of A’s existence before death is better or worse than the character of A’s existence after death. But if (b), death cannot be a harm or a benefit to A because A does not exist after death and thus cannot be worse off.

So, it seems that presence of an “immortal soul” in humans (or at least one that survives death for a while) is necessary to account for our ordinary intuition that death may be a harm or a benefit; if so, a consequence of this view is that, insofar as animals are regarded as lacking such continuing elements, death is not properly viewed as a harm (or a benefit) to them.

The relevance of the first claimed difference is paradoxical: insofar as animals do not survive death, it may not legitimately be asserted to be a harm for them; but, insofar as they are not able after death to experience redress for wrongs committed upon them during life, they have a stronger claim to moral consideration than to humans for whom an afterlife may offer the opportunity for such redress.

Many, however, will dispute the first premise, holding that either there is no evidence for the existence of such a soul in humans, or that there is no evidence of the absence of such a soul in an animal. Certainly in assessing such skepticism we will want to examine other claimed differences. Let us turn to them.

Humans experience pain and suffering; animals do not. Therefore, only humans are objects of moral concern. This view, which would not be regarded as obviously false by most, was favored by the 16th century French philosopher René Descartes and his followers. Descartes reasoned in this way:

The possession of language is the only evidence we have that other beings have minds like ours that think, reason, and feel. Animals lack language and are thus more like machines than like humans. Therefore, animals lack minds that think, reason, and feel. Hence, animals do not experience pain and suffering: only humans do.

This line of thought led Descartes and others to regard the “apparent” suffering of animals as of no moral consequence, since only mechanistic explanations of it were necessary. This reference to mechanistic explanations touches upon the germ of another line of argument. During the 18th century, ingenious machines were developed which could “behave” in life-like ways, and a neo-Cartesian argument re-emerged, to the effect that since machines could be fashioned that mimicked animal behavior (including we may suppose, the “apparent” suffering of animals) but could not mimic human language use, not only was the vital difference preserved but animals’ “pain” behavior could be explained away by application of mechanistic principles and the principle of parsimony, or Occam’s Razor, without recourse to the postulations of awareness or consciousness in animals.

The Cartesian view still exists in a variety of forms. The *Bulletin of the National Society for Medical Research*, an organization that, among other things, lobbies to block legislation that would restrict biomedical research, expresses the view that animals don’t really feel pain as we do. A prominent neurophysiologist, whose field of specialization is pain, has argued that since the electrochemical activity in the cerebral cortex associated with pain is different in animals and human beings, animal “pain” is not *really* like human pain since the human cerebral cortex governs higher intellectual activity. Presumably this ties to the related point that suffering, involving anticipation and remembrance of pain, seems to involve higher cortical functions that may not be present in an animal.

The relevance of all this is questionable. As long as we do not hold with the Cartesians that animals experience nothing at all and hence nothing unpleasant, the combined evidence of neurophysiology, evolutionary evidence, behavioral evidence, and even biochemical evidence overwhelmingly supports the view that animals feel something very much like what we call pain. If they cannot remember and

anticipate, their experience of pain may always be all-pervading and hopeless as contrasted with the cognitive basis for adult humans' tolerance of pain, and if they can remember and anticipate (likely at least for higher mammals, for example, that learn to cringe and tremble when threatened with a stick), they are all the more like us. Hence, this reason for denying animals the status of objects of moral concern seems not a valid one.

Humans stand at the apex of the evolutionary pyramid; animals do not. Only creatures at the top of the evolutionary pyramid are of moral concern. Hence, only humans are of moral concern.

The implicit premise seems to be, "only creatures at the top of the evolutionary pyramid are of moral concern." That premise will bring comfort only so long as we remain firmly seated at the top of the evolutionary pyramid (what that might mean will be examined shortly). But if the universe is populated by species more evolved than we — "more evolved" in precisely the ways we see ourselves as more evolved than other species — then we are caught out short by this argument and ought, by its logic, to assent to our being used by those superior beings in the same ways we use species inferior in position to ourselves.

Clearly the problem in this argument is that it is a relativistic one. It does not identify a property-characteristic, the possession of which would entitle any creature to moral consideration, be it human or not. Rather, it identifies a relational characteristic, possession of which is dependent wholly on external factors — in this case the supposed non-existence of yet "higher" forms — rather than internal features.

Moreover, the argument would seem only to qualify those humans that represent the "most evolved" examples of life. If intelligence, or linguistic ability, or inventiveness, or the capacity for laughter, or the ability to write poetry are thought to be marks of human superiority over the other animals, then those humans lacking in the capacities and abilities cited fall out of the apical group and are thus no longer, by this argument, objects of moral concern. This, of course, flies in the face of our intuitions and practices concerning infants, the retarded, the comatose, the senile, even the uneducated.

Finally, if it is the human species of which evolutionary supremacy is predicated, perhaps we should ask whether the criteria aren't stacked in its favor by itself. Strictly speaking, criteria of evolutionary excellence are concerned only with longevity, adaptability, and reproductive success, and compared with the cockroach, the turtle, and the rat, we are well down the ladder. Our alleged evolutionary supremacy must turn on other features such as intelligence, but these seem related to our supremacy only in allowing us to invent the means for our survival by controlling nature, instead of awaiting the results of natural processes of selection. And, doubtless, part of that control is exerted through our ability to experiment with and learn from animals — the very practice whose morality we are examining. This argument then may be circular: doing research on animals is morally OK because we are evolutionarily superior because (in part) we do research on animals. But if there is not some independent ground for the permissibility of research on animals apart from the fact that we do it, we are not in any stronger a position than the thief who defended his crimes on the ground that stealing was his profession.

In a sense, arguments like the evolutionary argument are among the most persistent. We will encounter another version of the evolutionary argument when we review the other differences between ourselves and other animals that are thought to ground our differential treatment.

Humans have reason; animals do not. Humans have language; animals do not. Humans can engage in scientific reasoning and acquire universal knowledge; animals cannot.

The late 18th century philosopher, Immanuel Kant, used these three claims in his arguments. The intervening steps are numerous and complex, but perhaps in-

structive.

Only humans can possess *a priori* knowledge. Only the possession of *a priori* knowledge can allow a being to go beyond the particulars of sense experience of the world and assert judgments that claim universality not tied to specific times and places. All non-human animals are tied to a stimulus-conditioned or stimulus-instinctual response reactions. Therefore, humans have reason; animals do not. Therefore, Man is by nature a rational being.

It is man's function to be rational in all aspects of life, be it knowledge or action or in dealing with others. In science man must seek universally true laws. In daily actions man must intend, plan, and evaluate his activities according to whether they are rational – whether they meet the tests of rationality, universality, and generality. Given any action or intended action, a person must ask himself if his action can be expressed as a universal law without generating an inconsistency or contradiction. All humans, as rational beings, are essentially the same, with the same ultimate end, or nature or goal – the ultimate good is the exercise of rational function. All men deserve to be treated as ends in themselves as of intrinsic value (since there is no essential difference that would justify treating others as means to one's own ends).

But animals, being non-rational being, are not ends in themselves. All universal knowledge is expressible only in universal statements composed of general terms. All reasoning consists in inferences from statements composed (at least in the main) of general terms. Hence, all reasoning and all universal knowledge requires language. Only language users may be rational. Only human beings are language users; animals are not. Hence, “animals are merely means to an end. That end is man.” (Kant, *Lectures on Ethics*, p. 239.) Animals have only instrumental value; they do not have intrinsic value.

In addition to the foregoing, a second argument has emerged that ties the possession of language to being a possessor of various rights. It is, briefly, that to possess a right one must be capable of making a claim. For, to have a right is to have a claim *to* something and *against* someone, the recognition of which is called for by legal or institutional rules or by the principles of an enlightened moral consciousness. And to have such a claim, one must be capable of *making a claim* on one's behalf – making motions before a court to have claims recognized; initiating legal proceedings; recognizing where rights are being violated; distinguishing harm from injury; responding with indignation and an outraged sense of justice instead of just anger and fear. Humans have language in which these activities are possible; animals do not; therefore, only humans have rights.

This set of arguments which tie being an object of direct moral concern with features thought to be characteristic only of humans, constitutes perhaps the strongest line of defense for the experimental use of animals.

It is also interesting to not how well it captures a number of other points that were made in conjunction with the program for freshman medical students. One was predicated on the existence in humans of curiosity, of a drive to acquire knowledge. Kant's argument in effect identifies this drive, together with the rational faculties necessary to satisfy it, as that which is essentially and uniquely human. He also accords to those animals that lack this drive the status of means to this human end – as material to be employed in humans' search for knowledge.

A related point was made concerning the priority we accord to human life over animal life, choosing to sacrifice the latter so as to further the quality, quantity, and duration of the former. Kant's argument, seeking as it does to establish that among all known creatures, only humans are ends in themselves, sets humans in the forefront of a rational prioritizing. So, both with respect to the general quest for knowledge (the pure pursuit of knowledge as the activity of humans who are ends in themselves) and the quest for knowledge that aims at alleviating human suffering (the pragmatic pursuit of knowledge as an instrument in service of those who are ends in themselves), Kant's theory nicely grounds these positions.

There are some disturbing consequences of Kant's view that should be reviewed in assessing it. The most obvious turns upon the identification of the capacity for rational activity as *the* defining characteristic for status as a primary object of moral concern. For, given this sole criterion, all sorts of humans fail to qualify: all infants below a certain age; the severely and profoundly retarded; the comatose; individuals afflicted with certain forms of mental illness (such as severe clinical depression); the severely senile; and perhaps members of extremely primitive tribes such as those discussed by anthropologist Margaret Mead. If these individuals are to count as primary objects of moral concern (despite lacking the requisites for moral agency), then they do so not in virtue of manifesting the capacity for rational activity and they may well be more like those animals about which Kant concluded that their value consisted in serving as means to the ends of the rest of us.

Now of course several responses are available, all closely related. One may well assert that all humans are deserving of respect as ends in themselves because they are of the same species as individuals who do manifest rationality. This certainly connects closely with our sense that in the exceptions mentioned the absence of rational activity is temporary (as in the case of children, the unconscious, and the reversibly comatose) or may be reversible or restorable in the future given further advances in knowledge. That is, rationally is potentially present in virtually all members of the species; it represents a species norm towards the actualization of which our efforts strive, and over the absence or loss of which we are anguished.

But this leads to a second line of criticism. It is not at all that certain that reasoning and the presence of universal knowledge are absent in all but the human species. First, many would object to the limitation of rationality to universal knowledge, which depends on the presence of linguistic systems for its production and transmission. We have many common references to the rationality of, say, a driver's swerving into a snow bank in order to avoid a collision with a child on a bike, or of an individual's rationality in giving up in a fight when his opponent has clearly outmatched him (examples from Rollin, p. 22). Many animals engage in this sort of behavior that doesn't seem to require universal knowledge or language at all and that seems perfectly rational. In fact, we use animal behavior models to study human cognitive behavior, thus trading upon implicit analogies between the behavior of our own and other species.

Other examples of animals exhibiting behavior that seems to be the product of a reasoning process rather than training comes to mind. Anyone who has lived with animals can tell such stories. (We cared for the horses of a colleague while he and his family were on a year's trip to Europe. One of their horses would run off to lead us away from the barn, then circle back and contentedly munch on the salt tablets we had just purchased for the water softener. See Rollins for other examples, pp. 23-24). We also use language a great deal in training animals, a practice that presupposes the animal's capacity to generalize from the specific features of one context to another. Finally, there is the example of higher primates' acquisition of simple linguistic sign systems. All of these suggest that, at best, non-human animals do not differ in kind from humans with respect to the possession of rationality and its behavioral accompaniments of language, but only in degree. Even in those animals in which clear signs of linguistic ability are absent, there seems to be evidence of a form of pragmatic or practical reasoning that indicates that our supremacy may well be as occupants of a distal end of a spectrum of rational capacity.

So rationality and linguistic capacity, either in individuals or in a species do not give a fully satisfactory ground for excluding all non-human animals from the status of primary objects of moral concern. Nonetheless, the position still provides an apparent basis for prioritizing human interests over those of animals. That is, one may well see in the emergence in the human species of rationality and linguistic capacity in their most sophisticated forms a basis for preferring the interests of humans over those of non-human animals, and of the more human-like animals over the less,

when those interests conflict. That is, one may consistently accord status as primary objects of moral concern to non-human animals (thus providing a basis for moral criticism and perhaps legal sanctions against the dog beater or the child who pulls the ears of his pet rabbit) while defending the extraction, in the absence of alternatives, of substances used in research on human or animal medicines, such as tetanus antitoxin produced by injecting toxins into horses then collecting blood serum and extracting the antitoxins produced by the horse's immune system.

This completes the review, if not the full assessment, of some of the arguments favoring not according any moral status or any decisive moral status to non-human animals. In a sense it may have been an intellectual exercise for this group, since I suspect that most will grant that at least some non-human animals have a legitimate claim (even if they cannot directly voice it) upon our moral consideration. But the argument as it stands turns solely on the manifestation of rationality, and it provides no basis whatever for moral concerns about animals that lack reason's vestiges. Moreover, the Kantian position fails utterly to address two other features of humans that are shared with a great many sentient creatures and that were only briefly touched on earlier. Those are: the capacity to experience pain, and the capacity to experience pleasure or satisfaction.

It is one of the ironies of the history of thought about animals that the science of physiology, which experienced an enormous upsurge in the post-Cartesian era of regarding animals as mechanistic, unconscious automata, has been a major source of evidence that animals and humans possess markedly similar biochemical mechanisms that are correlated with the production and masking in humans of pain. The psychophysical parallels in humans on the basis of which we are able to meaningfully report to one another our subjective states and to conclude of others that they share those states, have the status of laws; we are thus led when we observe the physiological as well as behavioral concomitants of such subjective states in animals, to conclude that they experience similar subjective states. While one may instructively examine the character of these evidences, and perhaps even draw into question the significance in low forms such as earthworms of X- and B- endorphins and enkephalin, I shall take it as a well-established hypothesis that many forms of animal life experience pain or pain-like sensations.

Perhaps less widely accepted in the community of animal users is the hypothesis that animals experience something very akin to pleasure or satisfaction. Proponents of animal rights frequently maintain that animals – even insects – have interests in the sense of in the sense of needs whose satisfaction or non-satisfaction matters to them as evidence by their behavior. The more sophisticated of this ilk acknowledge a spectrum of interests arrayed in terms of such features as intensity, duration, complexity of awareness, etc., and also admit the relevance of neurophysiological, biochemical, anatomical, and evolutionary evidence for the presence of interests. The tendency is to assert, contra Descartes, a continuity of consciousness running through all animal life, rather than a discontinuity of consciousness in humans and non-conscious mental processes in non-human animals. However the details of such quasi-metaphysical speculations are sorted out, I shall take as a working hypothesis that non-human animals are conscious or aware of pain and pleasure and other unpleasant and pleasant states and activities such as anxiety, boredom, frustration, anger, stretching and other kinesthetic feelings and drive reductions, and that the contents of their conscious lives are not matters of uniform indifference to them.

What is the relevance of such a working hypothesis for the question of whether and to what extent animals merit moral consideration? The argument from this hypothesis seems to proceed as follows.

Animals as well as humans experience pain and pleasure and other unpleasant and pleasant states and activities. In terms of their intrinsic features, pain is bad or evil and pleasure is good. Whatever is evil ought, *prima facie*, to be avoided or pre-

vented, and whatever is good ought, *prima facie*, to be sought after and caused. Hence, pain and unpleasant experiences ought *prima facie*, to be avoided and prevented, and pleasure and pleasant experiences ought, *prima facie*, to be sought after and produced. The claim that a particular good ought to be sought after or caused is defeasible if and only if it leads to an increase in balance of evil over good; the claim that a particular evil ought to be avoided or prevented is defeasible if and only if it leads to an increase in the balance of good over evil. Hence, pain and unpleasant states and experiences may be, or must be, allowed or caused, but only if doing so is productive of a greater good than would otherwise be attained (where that good is unattainable without causing pain and unpleasant states and experiences); pleasure and pleasant experiences may be avoided or prevented if and only if allowing or causing them leads to a greater amount of evil or a lesser amount of good than would be otherwise attained (where those pleasant experiences could not occur without a concomitant negative shift in the balance of good and evil).

This ethical stance differs from the Kantian one in three major respects. First, it focuses on features we have in common with animals – chiefly, sentience or awareness of pleasure and pain and other pleasant and unpleasant states. Second, it accords to those common features moral significance, proposing that the line of demarcation between things of primary moral worth and things not of primary moral concern be drawn so as to include non-human, sentient creatures along with humans on the one side, and plants, stones, artifacts and other inanimate objects on the other side, as not meriting primary moral concern. Third, it counts the rational activity so admired by Kant as but one good, and as a good not because of any intrinsic worth but because of its tendency to produce pleasure and reduce the unpleasant states of ignorance, boredom, and unrequited puzzlement.

If we express the implications of this utilitarian ethic for animal experimentation in more general principles, we get the following two statements: Animal research, whether basic, applied, or technological, related to product safety, educational, or involved in product extraction, must be such that the benefit to humans (and possibly animals) clearly outweighs the pain and suffering experienced by the experimental animals. And, in cases where research is justified by the utilitarian principle, it should be conducted in such a way as to maximize the animal's potential for living its life according to those features of its nature the frustration of which results in unpleasant experience; certain fundamental "rights" ought to be preserved as far as possible, given the nature of the research and its justifying goals, including the right to be free from pain, to be housed and fed in accordance with its nature, to exercise, to have company if it is a social being, etc.; and these rights ought normally to be observed regardless of cost. These principles are but applications of the utilitarian principle, which enjoins us generally to minimize pain and other evils as it maximizes pleasure and other goods.

There are various difficulties and complexities associated with this application of the utilitarian ethic. One of the most notorious, not merely in the application to animal research but in the theory's application to human interests as well, is that of competing goods or interests. How shall we judge a researcher's interest in scratching his or her curiosity bump, in satisfying his or her drive to know, as over and against the interests in living and in avoiding pain that, putatively, his or her animal research subjects have? An ultimate answer to this kind of question may not be forthcoming, for such issues as whether knowledge for knowledge's sake is an intrinsic value and whether it is the ultimate of intrinsic values, may well be unanswerable because of its extreme remoteness from any commonly accepted standard of evaluation. That lack of completeness of our account, however, should not blind us to the possibility of conducting such research as we do in a way that approximates the humane principles or research that come from the utilitarian principle.

The choice between the Kantian ethic and the utilitarian ethic has profound implica-

tions for how we view animal research. If we accept Kant's position and nothing else, the result is an elevation of human interests to a point where concern over animal use is couched only in terms of their effects on human character. "Kant does assert that we should avoid (and discourage) cruelty (to animals), but only for the reasons that cruelty to animals can lead to cruelty towards men, or that an animal is human property, and to damage that animal is to harm a person." (Rollin, p. 19) The treatment of animals, on this view, is to be viewed instrumentally vis-à-vis human morality; animals are not objects of primary but only of secondary moral concern. This is a position shared in one way or another by many other thinkers in the history of Western thought, including such luminaries as St. Thomas Aquinas, Plato, Aristotle, Descartes, so one who holds it is certainly in good company. This view is defended by many physicians. Perhaps Robert J. White, the researcher who, in 1964, first succeeded in totally isolating the subhuman primate brain in an in vivo preparation, speaks eloquently for those physicians and philosophers:

As a concerned scientist and as a practicing neurosurgeon, I am simply unable to plumb the depths of a philosophy that places such a premium on animal life even at the expense of human existence and improvement. It would appear that his preoccupation with the alleged pain and suffering of the animals used in medical research may well represent, at the very least, social prejudice against medicine or, more seriously, true psychiatric aberrations. Regardless of the social or psychiatric shortcomings of the antivivisectionists, it has always amazed me that the biological profession is forced into a position of periodically preparing defense briefs on animal experimentation (unfortunately appearing only in scientific journals) as a result of the Herculean efforts of these societies, while the meat-packing industry, which slaughters millions of animals annually, seldom if ever finds it necessary to defend its activities.

As I write this article, I relive my vivid experiences of yesterday when I removed at operation a large tumor from the cerebellum and brain stem of a small child. This was a surgical undertaking that would have been impossible a few decades ago, highly dangerous a few years ago, but is today, thanks to extensive experimentation on the brains of lower animals, routinely accomplished with a high degree of safety.

The human brain is the most complex, the most superbly designed structure known. Before it, all human scientific and engineering accomplishment pales. Our understanding of its intimate functions, such as intelligence and memory, is extremely limited. Even the more easily characterized capabilities of sensory reception and motor activity are only now being elucidated. Without the use of the experimental animal, particularly a species whose central nervous system is similar to that of man, we simply cannot decipher the mysteries of cerebral performance. Without this knowledge of brain function, we will never be able to develop new and improved methods for the treatment of neurological diseases, so many of which now must be placed in an incurable category.

In the final analysis, there is no way that I can personally resolve or even arbitrate the impasse that exists between the theology of the antivivisection movement and the immutable stance of practicality maintained by biological research, since like R. D. Guthrie, I believe that the inclusion of lower animals in our ethical system is philosophically meaningless and operationally impossible and that, consequently, antivivisection theory and practice have no moral or ethical basis.

The utilitarians, however, view the similarities of humans and animals to be far more significant, morally, than their differences. Here the moral principle is, in effect, a cost/benefit one that does not single out costs and benefits to one species to be of inherently greater import than those to another. If human suffering and human happiness were always qualitatively and quantitatively greater than animal suffering

and happiness, the results of the two positions would be much the same. But it does not look like there are any general arguments that could establish human interests as always paramount; certainly the pleasures that a sadist derives from torturing large numbers of animals is outweighed by their pain and suffering, as well as other evils produced by such barbarousness. So, we are forced to consider individual cases, or at least classes of cases.

Another well-known physician, one whose commitment to human welfare and the relief and prevention of human suffering cannot be doubted, is Albert Schweitzer. He wrote:

The surmising and longing of all deeply religious personalities is comprehended and contained in the ethics of reverence for life. This, however, does not build up a world-view as a completed system, but resigns itself to leave the cathedral perforce incomplete. It is only able to finish the choir. Yet in this true piety celebrates a living and continuous divine service

What does reverence for life teach us about the relations of man and the non-human animals?

Whenever I injure life of any kind I must be quite clear as to whether this is necessary or not. I ought never to pass the limits of the unavoidable, even in apparently insignificant cases. The countryman who has mowed down a thousand blossoms in his meadow as fodder for his cows should take care that on the way home he does not, in wanton pastime, switch off the head of a single flower growing on the edge of the road, for in so doing he injures life without being forced to do so by necessity.

Those who test operations or drugs on animals, or who inoculate them with diseases so that they may be able to help human beings by means of the results thus obtained, ought never to rest satisfied with the general idea that their dreadful doings are performed in pursuit of a worthy aim. It is their duty to ponder in every separate case whether it is really and truly necessary thus to sacrifice an animal for humanity. They ought to be filled with anxious care to alleviate as much as possible the pain which they cause. How many outrages are committed in this way in scientific institutions where narcotics are often omitted to save time and trouble! How many also when animals are made to suffer agonizing tortures, only in order to demonstrate to students scientific truths which are perfectly well known. The very fact that the animal, as a victim of research, has in his pain rendered such services to suffering men, has itself created a new and unique relation of solidarity between animals and ourselves. The result is that a fresh obligation is laid on each of us to do as much good as we possibly can to all creatures in all sorts of circumstances. When I help an insect out of his troubles all that I do is attempt to remove some of the guilt contracted through these crimes against animals.

The contrast between White and Schweitzer may be more theoretical than in application. Nonetheless, Schweitzer seems to allow the research that White has performed. The contrast, rather, is in the attitudes that each brings to animal research and the question of its justification. White's theory, ironically, implies that the practices outside of animal research that he identifies – the meat industry, the fur industry, and other uses of animals, need no justification, whereas Schweitzer's ethic would place these other usages under the most strict moral scrutiny.

Works cited.

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