

Neuroethics and Animals

Methods and Philosophy

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Abstract: This article provides an overview of the six other contributions in the Neuroethics and Animals special section. In addition, it discusses the methodological and theoretical problems of interdisciplinary fields. The article suggests that interdisciplinary approaches without established methodological and theoretical bases are difficult to assess scientifically. This might cause these fields to expand without actually advancing.

Keywords: neuroethics; methods; interdisciplinarity; animal research; bioethics; philosophy; neuroscience

Neuroethics continues to be one of the hot new topics within—or closely related to—bioethics. Like many other fields related to bioethics, it stands at the cross section of the natural sciences, philosophy, and the social sciences. As a study subject, it can roughly refer to the ethical issues directly related to neurological interventions and their justifications—be those for research, diagnostics, treatment, or other purposes—or to the ethical issues that arise as a result of such interventions and their applications—interpreting and drawing conclusions from the results, and examining the justified implications and use of those results.

In 2010, a special section on Philosophical Issues in Neuroethics appeared in this journal.¹ That issue dealt exclusively with neuroethics as applied to humans, and two key areas of interest were recognized: moral responsibility and the limitations of the neurological data gathered. In terms of philosophy, in addition to ethics, these limitations have mainly to do with questions related to the philosophy of mind (e.g., questions having to do with the relationship between brain states and mind states) and philosophy of science (including the degree to which we can hold scientific findings “true,” or valid).

The current special section dives into the relatively neglected area of animals and neuroethics. In the existing fields of study, much of what is discussed draws from animal research ethics, but matters having to do with the philosophy of mind (consciousness and mental functions) and philosophy of science (the suitability of animal models) also come to play a part. The following is the story told by the articles in the special section, with some comments on their scope and the methods of investigating these and related issues.

Animals Are Not People, but They Should Be Treated Humanely

Neuroethical considerations have primarily been human centered, for traditional, and in some cases possibly dated, reasons. Neuroscience explores minds with

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thoughts and beliefs, and as long as we are reluctant to attribute these mental states to other animals, it seems that neuroethics in the sense of the ethics of neurosciences must, of necessity, address mainly human matters. And where science in this field informs law and morality, the matters discussed are voluntary choices that can be praise- or blameworthy. Again, as long as we do not perceive other animals as moral agents, neuroethics in the sense of science-informed regulation remains a matter for humans.²

The assumptions made in these discussions have no scientific basis, but they guide our thinking about the distinction between humans and animals. The results of neuroimaging are, in the case of human beings, compared to verbal reports on the mental processes going on while lights flash on the screen. Consequently, the idea is that our intellectual and emotional lives can be best explained by inner factors. In the meantime, the behavior of other animals is studied in the light of their environment and external stimuli.³

Although neuroscience tells us that human beings and certain other animals are quite alike when it comes to brain processes, sentience, and behavior patterns, a sharp distinction is drawn between species where research, including neuroresearch, is concerned. One example of this is the use of chimpanzees in invasive and painful scientific experiments. Researchers argue that the close similarities between chimpanzee and human brain functions make it imperative to experiment on chimpanzees when this would be too dangerous or onerous for humans and when the knowledge cannot be acquired by any other means. Opponents of these experiments, in their turn, argue that the admitted mental similarities assign all great apes a high moral status that should foreclose even the possibility of harmful investigations.⁴

It has been suggested that pediatric research ethics could offer guidance in chimpanzee research ethics as well. Andrew Fenton argues that the procedure of assent is legitimately different in these two cases, but that the procedure of dissent could be used. The notion of assent in children is based on a certain understanding that they are thought to have about the benefits of science and a general empathy they are thought to feel toward other children, framed by other people's protective attitudes for them. Chimpanzees are not believed to possess the proper mental states for the first two, and prevailing attitudes are certainly not always on their side. Dissent is a simpler matter. Like children, chimpanzees can sense pain and distress, they can anticipate painful and distressful situations, and they can express their preference to avoid such situations. Accepting their dissent as valid would certainly be better, and more ethical, than tranquilizing them, restraining them, or training them for use in painful experiments. Some research would remain undone. But if it cannot be conducted without hurting intelligent and sentient beings, that is a result we should learn to live with.⁵

When it comes to research on mental illnesses, the entire validity and morality of using animal models can be seriously questioned. Mental ailments are assumed to have a basis in physiological processes, and behavioral symptoms are believed to have correlations with diseases of the mind. The assumptions and beliefs are, however, problematic. Even with human study subjects, observable symptoms do not have adequate connections with defined conditions. One symptom can be an indication of many different states in the disease classification. And opposite symptoms can in some cases be associated with one and the same mental ailment.⁶

Things get even worse with animal experimentation. The assessment of psychiatric health and unhealth has to take into account three factors that can be properly accounted for only in humans. First, symptoms mean very little unless they are linked with internal, subjective experiences. With nonhuman animals, these are impossible to trace. Second, symptoms occur in a cultural context that gives them meaning. Different contexts are difficult enough to trace in diverse human life forms but are impossible in the case of animals. Third, symptoms and experiences of psychiatric conditions can only be properly understood if they can be placed in a life narrative, in which it becomes clear how one's current state of mind is not what it used to be and not what it should be. We do not know how to begin investigating these in nonhuman animals. Therefore, the use of animal models in human psychiatric research lacks scientific validity. And, as Michael Rollin and Bernard Rollin note, if it does not, then human and nonhuman mental conditions are so similar that it is difficult to see how experiments on other species would be ethically justifiable.⁷

Research on nonhuman animals can be both criticized and defended by utilitarian considerations. Experimentation can be painful for study subjects, and if pain experienced by sentient beings should be avoided, this gives rise to an argument against the practice. On the other hand, greater benefits can in some cases be achieved by scientific tests and their contributions to medicine and healthcare. This, in its turn, seems to provide a utilitarian justification for experiments on animals, human and nonhuman.⁸

The apparent discrepancy is largely due to the assumption that pleasure and pain, enjoyment and suffering, good and bad are symmetrical entities. Many hedonists and utilitarians have argued that this is the case—that pleasure can be seen simply as absence of pain. Neurophysiological findings indicate, however, that this is not true. The neural mechanisms for pleasure and pain are different, and pain is much more dominant in our world of experiences than pleasure. Because we can readily assume that the situation is the same with all sentient beings, or at least with all mammals, we should, according to Adam Shriver, rethink the justification of animal experiments. They can still be justified, on utilitarian grounds, when greater suffering can be prevented by causing minor pain. But on the asymmetrical view of pleasure and pain, they cannot be justified when animals are made to suffer to make people's lives more pleasurable.⁹

Animal experiments, including painful ones, are at the moment widely accepted in the scientific community. This acceptance is based on prevailing sociocultural responses and sentiments, norms, and values. One way of changing people's attitudes in this matter would be to increase their awareness of the neurological similarities between species. Current science shows that, apart from human beings, other mammals, as well as many vertebrates and cephalopods, also have rather sophisticated nervous systems, certainly sophisticated enough to make them capable of feeling pain and of possessing some level of consciousness.¹⁰

It has been customary to claim that animal pain is less important than human pain because only people can have the full cognitive and emotional experience of unpleasantness and hurt. In other animals, reactions of pain have been said to be simpler and not felt with similar intensity and alertness. Such comments are, so Sherry Loveless and James Giordano argue, contradicted by novel neurological findings. Taking pain as the common denominator, moral status can be assigned

to all sentient beings, and the infliction of pain without the subject's consent or for trivial purposes should be carefully assessed and, in the absence of sufficient scientific benefits and ethical reasons, discontinued.¹¹

The idea that nonhuman animals have moral status is based on folk psychological concepts like sentience and consciousness. For people who believe that some nonhumans have these, the moral status of animals prevents us from experimenting on them in certain ways. Researchers, however, would like to see more accurate, unambiguous, and scientifically measurable evidence of mental states before they commit themselves to the abolitionist or restrictive view. A possible way to reconcile these conflicting standpoints would be to seek help from neuroimaging.¹²

The problem of gaining knowledge of minds other than our own, nonhuman or human, is that we can only deduce their existence and functions from external, behavioral signs. We cannot be sure that persons expressing symptoms of pain really are in pain (they could be faking), and we cannot be sure that animals displaying similar symptoms are in pain (they may lack the capacity to actually and truly experience it). But according to Tom Buller, this kind of skepticism cannot necessarily be extended to the results of brain scans. If neuroimaging can identify structural and functional aspects of the human brain that are related to the experience of pain, and if comparable structural and functional aspects can be identified in a nonhuman brain, then we have more scientific proof of animal suffering.¹³

Methods and Aims in Ethics and Philosophy

Bioethics is often described as an interdisciplinary enterprise. At its best, this means drawing from the theoretical and methodological strengths of several disciplines to gather a more significant body of knowledge and understanding than one could do by approaching the issue from the perspective of a single discipline.

As an approach, however, interdisciplinarity has some shortcomings, mainly because it seems to pave the way to accepting less-than-rigorous research methods. When unrelated elements are picked from several disciplines, the methodological and theoretical foundations on which results should be based easily become unstable. Without an in-depth understanding of the natural sciences, a philosopher who relies on results reported in a science journal is basically just relying on authority. And this becomes more problematic when we are talking about new breakthroughs in the fields of natural sciences. In these cases there might be not one single paradigm shared by the scientific community but, rather, several competing ones. Although published science articles have undergone an internal review process that gives them credibility in their own niche, the choice between competing theoretical frameworks, made by the philosopher or by anyone else, is seldom a scientific one.

Reversing the roles, the case is arguably even more problematic when natural scientists use philosophical notions. The truth-value of philosophical claims is difficult to ascertain, and at any given moment there are several conflicting theories about the relationship between brain states and mind states, the nature of scientific findings, and moral duties and responsibilities. No general consensus normally prevails as to which theories are the right ones. These are matters of one school of thought against another. The choice that a philosopher makes between rival theories is already motivated by her own personal beliefs, but this

becomes even more tangible when the view is picked by a natural or social scientist whose methodological understanding of philosophy is most probably incomplete.

The trustworthiness of science (natural or otherwise) relies on the scientific method (although, as the philosophy of science tells us, even this is not straightforward). Each discipline has its methods and theories, and adherence to them gives support to the results. The problem with interdisciplinary research papers or projects is that they may not be based on any single identifiable theoretical framework or method. If advantage is taken of the results and findings of several disciplines, it is quite possible that no overarching method that could be called scientific or philosophical is in use. This can make contributions difficult to assess—in the absence of established criteria, it is not easy to say whether a view or point is well or badly supported.

Additionally, interdisciplinarity makes it difficult for a discipline to advance. Building on top of previous work becomes very difficult when previous work consists of secondary data from a number of fields and subjects. This could be one of the reasons why it seems that, for instance, bioethics has expanded vastly but has not moved forward as an academic and intellectual enterprise. The same arguments are presented over and over again in slightly different contexts. And given the speed with which natural sciences are advancing, and the expectations of the funding bodies that research should yield practically relevant results, theoretical and methodological questions are given too little attention.

In practice, it seems that the interdisciplinary method most commonly assumed in bioethics is to start with a normative conclusion and then to gather evidence from a number of incommensurable sources to justify one's normative views. The result will then always depend on the sources and assumptions that are chosen. And because there are no recognized criteria for this choice, the general reliability of the results remains a question mark.

The strengths as well as the weaknesses of interdisciplinarity are in evidence in the contributions to this special section. Insightful connections have been pointed out between the newest findings in neuroscience and gradually changing ethical views toward animal experimentation. As the authors themselves in many cases observe, the ethical questions underlying the use or nonuse of sentient animals in painful tests are not and cannot be solved by scientific facts. Those who think that the prevention of suffering is our primary obligation will argue against the use of animals and will present neurophysiological facts to support the case. Those who want to continue experimentation will argue for it by stating that, despite certain similarities, animal and human experiences are radically different. The choice between these views does not have any basis in science, be it single or interdisciplinary.

Notes

1. Takala T, ed. Philosophical issues in neuroethics [special section]. *Cambridge Quarterly of Healthcare Ethics* 2010;19:161–229.
2. Buller T, Shriver A, Farah M. Guest editorial: Broadening the focus. *Cambridge Quarterly of Healthcare Ethics* 2014;23:124–28.
3. See note 2, Buller et al. 2014.
4. Fenton A. Can a chimp say “no”? Reenvisioning chimpanzee dissent in harmful research. *Cambridge Quarterly of Healthcare Ethics* 2014;23:130–39.

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5. See note 4, Fenton 2014.
6. Rollin MDH, Rollin BE. Crazy like a fox: Validity and ethics of animal models of human psychiatric disease. *Cambridge Quarterly of Healthcare Ethics* 2014;23:140–51.
7. See note 6, Rollin, Rollin 2014.
8. Shriver AJ. The asymmetrical contributions of pleasure and pain to animal welfare. *Cambridge Quarterly of Healthcare Ethics* 2014;23:152–62.
9. See note 8, Shriver 2014.
10. Loveless SE, Giordano J. Neuroethics, painience, and neurocentric criteria for the moral treatment of animals. *Cambridge Quarterly of Healthcare Ethics* 2014;23:163–72.
11. See note 10, Loveless, Giordano 2014.
12. Buller T. Animal minds and neuroimaging: Bridging the gap between science and ethics? *Cambridge Quarterly of Healthcare Ethics* 2014;23:173–81.
13. See note 12, Buller 2014.