Online Ethics Center
FOR ENGINEERING AND SCIENCE

Changing the Subject

Year

1998

Description

This case describes in detail an experiment on an animal meant to stimulate discussion about the ethical issues that arise in animal research.

Body

Ken Shu's graduate research involves the use of animals to explore the workings of the central nervous system. In order to perform his experiments, Ken needs a fully functioning animal with a working nervous system -- in other words, the animal must be conscious. The experimental procedure begins with the administration of anesthetic, not for the animals' benefit, but for experimental convenience: It is much easier to handle the animals initially if they are rendered temporarily unconscious.

There is no cheaper or more effective anesthetic than carbon dioxide, which works simply by cutting off the animal's oxygen supply. The animals struggle violently when Ken places them in gas chambers constructed for this purpose, until the oxygen content in their tissues drops below the level necessary to support consciousness. Gross surgery is performed at this point. Ken works quickly to restrain the animal and remove its limbs, preventing further struggle that might result in nerve damage during the finer surgery to come.

The finer surgery takes an hour and a half on the average. Although the animal need not be conscious during this period, exposure to carbon dioxide for such a

long period would either kill the animal or cause irreversible brain damage, both unacceptable outcomes. Therefore, the animals are allowed to regain consciousness during the finer surgery. By the time an animal awakens, its legs are gone. Usually the animal explores the proximal stumps that remain after limb removal with its mouth. The animal tends to shake a little after exploring the wound sites, probably from shock. After the finer surgery and with its head braced, the animal, now reduced to an experimental prep, is subjected to intra-cellular penetrations of interneurons in its central nervous system in order to explore the relationship between nerve cell activity and animal behavior. The final phase of the experiment can last another eight hours if the animal survives that long. All of these procedures are performed without pain killers in a fully conscious animal.

Ken had always felt some degree of compassion for the experimental subjects. One day, he could no longer hold in the doubt he felt about the experiments, so he discussed his concern with his adviser, Dr. Carol Brown. Ken began his discussion with the often observed phenomenon of the animal searching for its missing limbs, and his fear that this behavior might indicate too high a level of self-knowledge for the types of experiments being performed in the lab. Even if this phenomenon could be discounted, Ken added, the existence of pain receptors in the animals implies a capacity for suffering.

To these concerns, Brown responded: "Do you have any idea where biological understanding would be today if it weren't for animal experimentation? These experiments may enhance our capacity to repair our nervous systems, give us new engineering approaches to information processing or even help us to design novel nervous systems. Even if these animals were self-aware, and most reputable scientists would disagree with you on that one, the ends of our experiments justify the means."

Back to Top

Discussion Questions

1. What criteria should be used to determine whether experimentation on a given animal is ethical? Some hold that the test should be that animal's capacity to suffer. In this case study, the animal in question has pain receptors and thus can presumably perceive pain. Yet the experimenter makes no attempt made to control the animal's pain. Is that ethical?
2. If the experimenter uses anesthetic to alleviate the animal's discomfort, does

that change your perspective on the ethics of the case study? If so, do you think it would be acceptable to use an anesthetized human in the experiment?

3. Some hold that the ethical test for experimentation on a given animal is that animal's level of awareness. However, there are no objective criteria to determine an animal's level of awareness. Presumably, primates have a high level of awareness, yet experiments are carried out on other primates that would never be allowed on humans. If you think awareness should be considered when determining the types of experiments that are permissible on a given species, what are some objective guidelines that should be used to determine the animal's level of awareness?
4. Some hold that social contract theory adequately explains animals' lack of rights; that because animals are unable to enter into a social contract with humans, we have no obligation to treat them one way or another. If individual humans are unable to represent themselves to our society, it is customary to provide them with advocates. Should animals have advocates?
5. Should it ever be permissible to perform experiments of this nature on humans?

Notes

Used with permission of Association for Practical and Professional Ethics. Case drawn from Research Ethics: Cases and Commentaries, Volume Two, Brian Schrag, Ed., February 1998.

Contributor(s)

Brian Schrag

Editor(s)

Brian Schrag

Rights

Resource Type

Case Study / Scenario
Hypothetical / Fictional Case

Parent Collection

Graduate Research Ethics: Cases and Commentaries - Volume 2, 1998

Topics

Animal Use
Research and Practice

Discipline(s)

Life and Environmental Sciences
Research Ethics

Publisher

Association for Practical and Professional Ethics
Authoring Institution
Association for Practical and Professional Ethics (APPE)