



Online Ethics Center
FOR ENGINEERING AND SCIENCE

Experiment Discomfort

Author(s)

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Year

2000

Description

A scenario about research that requires one to experiment on animals while the animal is conscious.

Body

You are a graduate student whose dissertation requires that you explore the workings of the central nervous system. Impressed with your ideas, your advisor, proposes that the two of you apply for funding in order to perform experiments on an animal to find the information you need. You know that performing these experiments requires a fully functioning animal with a working nervous system - in other words, the animal must be conscious.

You also know what such an experiment might be like. You know that the experimental procedure would begin 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. You also know that there is no cheaper or more effective anesthetic than carbon dioxide, which works simply by cutting off the animal's oxygen supply. The animals would struggle violently when placed in a gas chamber constructed for this purpose, until the

oxygen content in their tissues drops below the level necessary to support consciousness. After rendering the animal unconscious, you would have to perform gross surgery, working 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 would take about an hour and a half. 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, it would have to be allowed to regain consciousness during the finer surgery.

By the time the animal awakes, its legs would be gone. The animal would likely explore the proximal stumps that remain after limb removal with its mouth and start to shake a little after exploring the wound sites, probably from shock. After the finer surgery and with its head braced, the animal, reduced to an experimental prep, would be 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.

- How would you respond to your advisor's request?
- What, if any, difference does it make what kind of animal this is, and why?

Notes

Caroline Whitbeck introduced methods and modules for discussing numerous issues in responsible conduct of research at a Sigma Xi Forum in 2000. Partial funding for the development of this material came from an NIH grant.

You can find the entire sequence on the OEC at [Scenarios for Ethics Modules in the Responsible Conduct of Research](#). Some information in these historical modules may be out-of-date; for instance, there may be a new edition of the professional society's code that is referred to in an item. If you have suggestions for updates, please contact the OEC.

Contributor(s)

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Case Study / Scenario

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Scenarios for Ethics Modules in the Responsible Conduct of Research

Topics

Animal Use

Discipline(s)

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