Historically, treatment for pain relief has varied according to the social status of the sufferer. A similar tendency to make arbitrary distinctions affecting pain relief was found in an ethnographic study of animal research laboratories. The administration of pain-relieving drugs for animals in laboratories differed from standard practice for humans and, perhaps, for companion animals. Although anesthesia was used routinely for surgical procedures, its administration was sometimes haphazard. Analgesics, however, were rarely used. Most researchers had never thought about using analgesics and did not consider the subject worthy of serious attention. Scientists interviewed for this study agreed readily that animals are capable of feeling pain, but such assertions were muted by an overriding view of lab animals as creatures existing solely for the purposes of research. As a result, it was the exceptional scientist who was able to focus on anything about the animal's subjective experience that might lie outside the boundaries of the research protocol.

As Martin Pernick tells it, “The Case of McGonigle’s Foot” is a horror story (Pernick, 1985, pp. 3-8). On a summer day in 1862 a Philadelphia laborer named McGonigle took a fall and fractured his ankle. He was rushed to a hospital, where doctors immediately amputated the man’s foot — without anesthesia. This occurred 16 years after a public demonstration of ether anesthesia at the Massachusetts General Hospital had shown an astonished world that surgery could be painless. The Pennsylvania Hospital, where McGonigle was taken, had been among the last of the major medical institutions in the United States to introduce anesthetic drugs, but even there ether had been in use for a good 10 years. Chloroform and nitrous oxide had been in general use for almost as long as ether, and all were inexpensive and readily available in 1862. So why no anesthesia for poor McGonigle? (Who, incidentally, died of shock two days later.)

The case was not an isolated incident. For several decades after its discovery, anesthesia was withheld in a large proportion of surgical operations. According to records unearthed by Pernick and discussed in his fascinating study of 19th-century
attitudes toward pain, about 32 percent of all major limb amputations performed at the Pennsylvania Hospital from 1853 to 1862 were done without anesthesia. Pemick gives a comparable figure for amputations done at New York Hospital during the five years following the introduction of ether there (Pemick, 1985, p. 4).

The reasons for this drew upon a complex ideology of pain that attributed sensitivity to pain selectively, according to social status (sex, race or ethnic origin, age, education, social class) and personal habits (especially alcohol and drug use) as well as the nature of the surgical operation. People considered most sensitive to pain (and therefore the most likely to receive anesthesia) were women, the educated and wealthy classes, whites (except for recent immigrants), children and the elderly, and people with no history of alcohol or drug abuse. Their social opposites — males, the uneducated, the poor, "savages" (meaning blacks and Indians), Irish and German immigrants, young adults, and alcoholics — were considered least likely to need anesthesia because of their relative insensitivity to pain. McGonigle fit perfectly the model for insensitivity: the man was an uneducated Irish immigrant who had been drinking when he fell (Pemick, 1985, pp. 4, 148-167).

Down at the bottom of the hierarchy of sensitivity, along with the lower classes, was the place of animals. Silas Weir Mitchell, 19th-century physician and pioneer in neurology, wrote: "[I]n our process of being civilized we have won, I suspect, intensified capacity to suffer. The savage does not feel pain as we do; nor, as we examine the descending scale of life, do animals seem to have the acuteness of pain-sense at which we have arrived" (JAMA, 1967, p. 124).

This hierarchical view of life, so much a part of the 19-century ethos of colonialism, casts differences of skin color and class and culture (and species, the extreme case) as unbridgeable chasms. Such a perspective did not foster much empathy for the suffering of others, as this episode from the history of anesthesia illustrates. "The descending scale of life," however, is a metaphor from a bygone age. Already in the Victorian era (a time of great humanitarian and antivivisectionist movements), the scope of empathy was growing. Social historians have remarked upon the dawning, at about this time, of a distinctly modern sensitivity to the feelings of a widening circle of others. By the turn of the century, social station was no longer considered a relevant consideration in the decision to administer anesthetic drugs. Today we would no more condone operating on a Native American without anesthesia (or an Irish immigrant, drunk or not) than we would condone calling him or her a savage.

If we were to document the use of anesthesia in veterinary surgery over the past
century, we would probably find a pattern similar to that of the less fortunate classes of humans. Animal surgeons in the 19th century were slow to adopt surgical anesthesia, in spite of a strong campaign by the British antivivisection movement to counter the belief that animals were insensitive to pain (Pemick, 1985, p. 178). Antivivisectionist pressure prompted the British Association for the Advancement of Science to publish guidelines in 1871 that contained a requirement for the use of anesthetics in experimentation, but a study by Stewart Richards (1986; 1987) suggests that even the authors of these guidelines often did not follow them. John Scott Burdon Sanderson, who was one of the authors of the 1871 guidelines, omitted any mention of anesthesia in describing many experiments in his *Handbook for the Physiological Laboratory* (1873). Richards' detailed analysis of the *Handbook* reveals that about 15 percent of the potentially painful experiments did not specify the use of any anesthetic.

Nevertheless, the use of anesthesia for all major surgery, both animal and human, is now routine. This says something about how attitudes have changed, but it is hardly the end of the story. In a 3-year study of animal research laboratories in New York, I found that the administration of pain-relieving drugs to animals used in scientific experiments differs considerably from the standards for human patients — and, I suspect, for pets in veterinary hospitals. In the remainder of this paper, I will present some empirical findings from the study, and I will suggest a framework for understanding scientists' beliefs and practices regarding pain in laboratory animals. As will be seen, researchers tend to view lab animals as somehow different from other animals, belonging to an altogether distinct category of being. Now, as in centuries past, such rigid categorization schemes can have far-reaching consequences. Among these consequences are beliefs about the other's pain, and measures taken — or not taken — for its relief.

### Methods and Procedures

This report is based on an ethnographic study of laboratories located in two research institutions in the New York City area. At one of the institutions (hereafter referred to as the Institute), participants were selected using a random sampling technique, weighted to assure adequate representation of behaviorists and of those using species other than mice and rats. At the other, smaller, institution (hereafter referred to as the University), every eligible researcher was selected. A total of 27 scientists in 23 laboratories participated in the study, for an overall participation rate of 77% of those selected.
From January, 1985 through November, 1987 I spent hundreds of hours observing experiments on rats, mice, hamsters, toads, birds, rabbits, cats, monkeys, and fish. I took notes during these observations, from which I later typed a detailed account of each session. After several weeks or months (or, in one case, years) in a given laboratory, I interviewed the lab’s study participant, using a structured, open-ended interview guide. Interviews, which lasted about two hours, were tape recorded and later transcribed. In addition, each study participant filled out a questionnaire which provided background information on such variables as gender, age, marital status, pet ownership and educational background. All data reported below are from observation notes, interview transcripts, or background questionnaires.

**Anesthesia in Animal Research**

Until the passage of the Laboratory Animal Welfare Act (PL 89-544) in 1966, experimenters in this country had free rein to do whatever they wanted to animals in their laboratories. Even after 1966, researchers were not required to use anesthesia or any other pain-relieving drugs, since the Act was primarily intended to ensure that animals purchased by scientific laboratories were not stolen pets. The legislation also established some minimum standards for the humane care of animals awaiting experimentation. However, it covered only facilities that used dogs and cats, and it expressly exempted from regulation the treatment of animals “during actual research or experimentation.” (For a more detailed discussion of the Animal Welfare Act and relevant guidelines, see Phillips and Sechzer, 1989, pp. 17-34.)

The Act has been amended three times: in 1970, 1976, and 1985. The 1970 amendments changed its name to the Animal Welfare Act (dropping “Laboratory”), extended coverage to zoos and circuses and to many more species, and inserted a provision requiring “the appropriate use of anesthetic or tranquilizing drugs, when such use would be proper in the opinion of the attending veterinarian of such research facilities.” This was backed by a requirement (still in effect) that each research facility covered by the Act submit an annual report to the government showing how many animals of each species were used in experiments during the previous year, how many of these animals received pain-relieving drugs; and how many animals were used in painful experiments without receiving any pain relief. The report must include an explanation for any instances of the latter. These annual reports are public record, available by request under the Freedom of Information Act. I will return to this subject.
presently for a close look at the reports filed by the particular institutions examined in this study.

The 1976 amendments were concerned with issues irrelevant to this discussion (interstate transportation of animals and animal fighting ventures), but in 1985 the pain-relief provisions were strengthened somewhat. An explicit prohibition was placed on the use of paralytic drugs without anesthesia (once a popular procedure in vision research), and more authority was vested in the facility's veterinarian to make decisions about pain relief. In addition, the 1985 amendments required that an Institutional Animal Committee be established at each facility to review experiments that might involve pain, and to ensure that research meets all the standards of the Act, including these other new provisions: that the principal investigator consider alternatives to painful procedures; that animal pain and distress be minimized; and "that the withholding of tranquilizers, anesthesia, analgesia, or euthanasia when scientifically necessary shall continue for only the necessary period of time."

These regulations merely codified recommendations already established in the animal research guidelines of numerous professional scientific societies, as well as the guidelines of the National Institutes of Health (NIH). Compliance with the NIH guidelines, first published in 1963, is mandatory for researchers receiving NIH funds — and that means the majority of them (USDHHS, 1985). Moreover, the NIH guidelines cover all warm-blooded animals used in research, thus filling a gap left by the Animal Welfare Act's exclusion (until recently) of mice, rats and birds from its coverage.

The cumulative effect of these regulations and guidelines is constraining, despite the loophole that allows scientists to withhold anesthesia when "scientifically necessary." I observed no instances in which surgery was performed on unanesthetized animals, and without exception researchers told me they would consider it unacceptable to do so. Legal, political, and technical/scientific reasons for using anesthesia are overwhelming, quite aside from the ethical qualms that many researchers expressed. They feared the consequences of breaking the law and bringing down the wrath of animal advocates. They pointed out that it is more convenient to operate on anesthetized animals than on struggling ones. In addition, scientists have come to appreciate the many ways in which pain and stress can alter physiological functions and thereby affect the validity of research results. The clincher, perhaps, is that most reputable scientific journals will not publish results of painful research done on unanesthetized animals. One researcher told me frankly that he had wanted to curarize some monkeys without anesthesia for vision experiments, but he was deterred by the knowledge that he could never get the work published.
However, none of these rules or regulations can prevent a researcher from becoming inattentive or careless in monitoring an animal’s level of anesthesia during surgery. While one laboratory I visited had an elaborate array of equipment to monitor the physiological state of the cats and monkeys undergoing surgery there, many scientists who worked with rats and mice relied on nothing more than the animal’s general appearance. Unlike human operating rooms, animal laboratories have no full-time anesthesiologist standing by whose sole responsibility is to administer and monitor the anesthesia. Sometimes, during very long experiments, anesthetized animals are even left alone for hours at a time.

One morning when I arrived at a neuroscience laboratory to observe the finale of an experiment on a cat that had begun the day before, I found the investigators sitting around glumly. They had worked until about 1:00 o’clock the night before, they told me, leaving the cat anesthetized with a combination of drugs (urethane and surital) administered continuously through a vein. When a graduate student arrived the next morning at about 6:00 am, the cat was dead. There is no reason to suppose that the cat ever gained consciousness, but if it had, its open wounds would have caused intense suffering. Leaving anesthetized animals unattended through the night was standard practice in this laboratory, and is apparently so in many neuroscience labs, where experiments often last for 36 hours or longer. The intention is never to cause pain (nor, certainly, to kill the animal prematurely), but it is implausible to believe it never happens.

In another laboratory, I was present when a rat regained consciousness during brain surgery. The rat was one of 20 given brain transplants on one day by a team consisting of the senior investigator (study participant), a postdoctoral fellow, the facility’s veterinarian, and an undergraduate student. The procedure was for the veterinarian to inject each rat with anesthetic (chloropent, a commercially available drug containing pentobarbital and chlorohydrate) about 10 minutes prior to surgery. Then an incision was made in the top of the rat’s head, the skin drawn back, and a drill used to make a small hole in the skull. Into this opening the researcher injected a tiny amount of material that had been extracted from the brain of a rat fetus a few hours earlier. The incision was then closed with surgical staples and the rat was placed on a warming pad to recover. The whole procedure took about 20 minutes.

My notes for the afternoon show that at 2:35 pm, the postdoctoral fellow began drilling into the skull of a rat, which immediately began to squirm and struggle. The rat’s hind legs began scrambling in a coordinated running movement, eventually running...
right off the small cardboard box being used as a makeshift operating platform. While its hind quarters were hanging over the edge of the platform, the rat’s head was still held firmly in place by ear bars, part of the stereotaxic device that keeps the animal’s head correctly aligned for precise placement of the drill. The researcher kept on working on the skull, paying no attention to the rat’s frantic struggles. After several minutes of this, the rat managed to kick over the box-platform, making it impossible for the researcher to continue. At that point, he asked the veterinarian for more anesthesia, which the latter immediately injected. The researcher righted the box, repositioned the rat on it, and at once resumed drilling. The rat again struggled until half of its body had slipped off the box. The researcher continued drilling for about 30 seconds, then once more repositioned the rat. By this time—it was 2:45, ten minutes after the rat’s first movements—the booster dose of anesthesia had taken effect, and the animal became quiet, and remained so for the duration of the surgery. During all this time, the senior investigator, seated a few feet away performing an identical operation on another rat, did not look up from his work. The others paid no attention, either. They all acted as though nothing unusual or untoward was going on.

I asked the senior investigator about this incident when I interviewed him some three months later. I described what I had seen, and asked if he thought the rat had been in pain. He replied that “in that kind of situation, it’s probably more uncomfortable than anything else.” But then he asked, rhetorically, “Is it worthwhile giving a general anesthetic to prevent the animal from feeling those two minutes of pain that would be involved in surgery and risk killing the animal?” He continued, explaining at some length the statistical probability of accidents due to anesthetic overdose. Out of every 20 animals, he said, one or two are likely to be more resistant to the anesthesia than the others. But “99 percent of the animals that die before you want to terminate them, it’s because of anesthetic.” “I think that in order to eliminate all pain,” he concluded, “the chances are that you would be killing a lot more animals.”

This scientist did not seem very convinced, himself, that the rat felt “more uncomfortable than anything else.” But the question was not really important for him. Much more important was the possibility of losing data by inadvertently killing animals with too much anesthesia. The risk is not that animals might die—they were all to be killed a week or two later—but that they might die “before you want to terminate them.” In this passage, the scientist has subtly clothed his interest in the success of his experiment in the nobler garb of concern for the animal’s life.
Analgesia in Animal Research

In spite of these kinds of lapses, there is a wide consensus among researchers that anesthetics should be used in pretty much the same situations as for humans, and in practice this is usually followed. At any rate, researchers have virtually no latitude in deciding when to administer anesthetics. Analgesics — painkillers, such as aspirin — are an entirely different matter. The use of analgesics in animal research, in practice, if not in theory, is left almost entirely to the discretion of the investigator. For this reason, the administration of analgesics can provide us with a far more sensitive indicator of the view of animal pain and suffering held by scientific researchers than can the use of anesthetics.

On the face of it, the federal regulations require the use of analgesics no less than anesthetics. The Animal Welfare Act mandates that “animal pain and distress [be] minimized, including adequate veterinary care with the appropriate use of anesthetic, analgesic, tranquilizing drugs, or euthanasia” (1966, PL 89-544 Sec. 13 [3][A]) and that “in any practice which could cause pain to animals — (i) that a doctor of veterinary medicine [be] consulted in the planning of such procedures; (ii) for the use of tranquilizers, analgesics, and anesthetics” (1966, PL 89-544 Sec. 13 [3] [C] [i,ii]). The NIH Guide is more specific. It states: “Postsurgical care should include observing the animal to ensure uneventful recovery from anesthetic and surgery; administering supportive fluids, analgesics, and other drugs as required . . .” (USDHHS, 1985, p. 38).

Analgesics are routinely given to human patients following surgery, and in fact a number of commentators have made much of modern Westerners’ dependence on painkillers (e.g., Illich, 1976; see also Pemick, 1985, pp. 233-234). In the animal laboratories, however, analgesics were rarely used. No one (with the possible exception of some animal welfare advocates) considers this a violation of the regulations, but rather a (more or less) legitimate interpretation of the “appropriate use” and “as required” clauses. Whereas the regulations were invariably interpreted to require anesthesia for surgery, they were not construed to require analgesic drugs under any specific conditions. Analgesics were considered—when they were considered at all—to be a matter for individual judgement.

In the 23 laboratories I visited, I never saw an analgesic administered, although two researchers reported regular analgesic use: monkeys were said to be given Tylenol (acetaminophen) after brain surgery in one laboratory; and rats that had had brain surgery in another laboratory were reportedly given Talwin (pentazocine, a potent...
nonnarcotic analgesic), at the veterinarian's suggestion. I was not present immediately after surgeries in either laboratory, but I have no reason to doubt these reports.

In a third laboratory, the senior investigator told me that he gives post-operative rats an aspirin in their water "all the time." (He later modified this claim to "sometimes," and, when pressed, "not normally.") However, this laboratory chief had his graduate students do all the surgeries, and the student I had observed not only did not administer aspirin, but she told me that she never did so because aspirin is not appropriate for rats. It was her belief that "there just are no analgesics appropriate for rats." In a fourth laboratory, monkeys received no analgesics after head surgery at the time of my visits, but both scientists interviewed here stated their intention to begin the use of opiates for this purpose soon.

It should be noted that in five laboratories there was really no opportunity to administer analgesics, either because the animals were killed while still under surgical anesthesia or because nothing that would normally be considered painful was done to them. This discussion, which assumes that the question of whether or not to administer an analgesic is an applicable one, should be understood to refer only to the remaining 18 laboratories. In most of the latter, major survival surgery provided a situation in which one could reasonably wonder if an analgesic might be appropriate (see Table 1).

The large majority of researchers interviewed for the present study who did not administer analgesics (Table 1, Category E) appeared surprised when I asked about

<table>
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<th>Table 1. Use of analgesics by study participants</th>
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<tr>
<td>CATEGORY</td>
</tr>
<tr>
<td>A. Inapplicable</td>
</tr>
<tr>
<td>(Animals killed before regaining consciousness from surgical anesthesia; or no painful procedures)</td>
</tr>
<tr>
<td>B. Analgesic use after surgery reported on a regular basis</td>
</tr>
<tr>
<td>C. Analgesic use after surgery (for monkeys only) to be instituted soon</td>
</tr>
<tr>
<td>D. Analgesic use reported but contradicted by observations</td>
</tr>
<tr>
<td>E. No analgesic use reported or observed, nor any plans to consider it</td>
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</table>
them. Some answered as though they thought I meant anesthetics; others said the idea had never occurred to them; many assured me that their animals did not seem to need painkillers; a few, like the graduate student performing rat surgery, thought none was available; and a sizable proportion added that, in any event, they would not want to introduce the unpredictable effects of a new variable into their research results.

The following interview excerpts are drawn from many that illustrate these themes:

**MTP:** Do the rats suffer much coming out of anesthesia, after the surgery?

**Researcher:** Well, I can imagine they have a headache.

**MTP:** Do they ever get analgesics?

**Researcher:** Um [pause] No, I don’t think so. Of course, they are certainly anesthetized for surgery. Um [trails off]

**MTP:** Is that something you’ve ever given any thought to?

**Researcher:** I’ve never given it any thought. I’m not sure I would, anyway. I give myself as few drugs as possible, even when I’m in pain. . . That’s tricky, to dwell on that issue. One could turn down all sorts of alleyways of thought.

***

**MTP:** Is there any pain recovering from that surgery [rats recovering from ovariectomies]?

**Researcher:** I would imagine that after any surgery there must be some pain. They don’t seem to show any discomfort. They eat as well. They drink as well. They walk around as well as before. But I can’t ask them.

**MTP:** Do you ever use, or have you ever considered using, analgesics?

**Researcher:** No, we don’t use that.

**MTP:** Is there any particular reason?

**Researcher:** I think simply because it would add another variable to the experiment. And because you don’t see the animal in any apparent discomfort.

***

**MTP:** Do you ever give analgesics to rodents or monkeys, or cats when you work with them?

**Researcher:** Anesthetics.

**MTP:** No, analgesics. Painkillers. [pause] Things like aspirin, Tylenol.

**Researcher:** Uh [pause] No. I never have...You would first have to ask the question, is the aspirin going to affect any phenomena you’re looking at. In order to investigate that, and what dose, and how long,. . . you’d have to do
an experiment...You'd have to add an extra control group...It would just
be adding another variable.

MTP: Has this ever been a subject of discussion with anybody?
Researcher: Never. (chuckles) Never mentioned whether animals should take
aspirin or not...If you give an animal an aspirin to overcome its discomfort,
then what about sleeping on a wire mesh floor? I mean, shouldn't you have
some shavings for the animal to sleep on? Wouldn't they be more comfortable
if you did that?...The goal of your research then becomes providing a
pleasant surrounding for your animals.

Most researchers had never sought a veterinarian's advice on this subject, and the
last quoted above even seemed amused by the idea. Yet they had had very little training
in this area, and often admitted ignorance about available drugs. The only scientist who
did consult a veterinarian — an endocrinologist who was worried about the poor
appearance of her rats after surgery — was advised to administer a painkiller, a practice
that she told me had since become routine in her laboratory (this was the laboratory in
which I was told Talwin was given). In only two other laboratories were discussions
about the issue reported to have taken place, and in both cases the decision was
subsequently made to give analgesics. Elsewhere, the question was not treated as worthy
of serious discussion.

Inaccurate beliefs were sometimes given as reasons for not considering analgesics.
For instance, a scientist told me that he could not give cats morphine-related analgesics,
because "cats don't tolerate morphine drugs." Another told me that "Demerol drives
[cats] crazy; they go bananas if you give them Demerol." In fact, a standard veterinary
manual recommends Demerol (the trade name for meperidine, a morphine-like narcotic)
and other opioids, such as buprenorphine, for cats (Flecknell, 1987). In another
laboratory, a neuroscientist assured me that the nembutal anesthesia he used in monkey
surgery had an analgesic effect that lasted for "half a day" after the animals regained
consciousness. On the contrary, the veterinary manual states that one of nembutal's
undesirable characteristics is its poor analgesic activity (Flecknell, 1987, p. 35).
Recovery from nembutal anesthesia (as from other barbiturates) is prolonged, causing
the animal to remain groggy for hours afterwards; that effect may have led the researcher
to think, mistakenly, that nembutal is also an analgesic.

I do not mean to imply that all of the animals were in pain after the surgical
operations I observed or that they should have been given painkillers. I am not claiming
a privileged position from which to judge such matters. In fact, I was amazed, just as some scientists said they were, by how active and normal many of the animals appeared as they emerged from anesthesia. (On the other hand, there were also some that looked miserable.) However, at the time of my field work, there was growing discussion of this issue in the animal science and veterinary literature. Elsewhere I have documented a sharp rise in publications on this topic beginning in the mid-1970s (Phillips and Sechzer, 1989, pp. 58-60). Experts in the field of animal pain were pointing out that pain may be present in spite of an animal’s “normal” appearance (Dawkins 1980), and many were urging the use of analgesics, especially after surgery. Manuals and papers with advice on appropriate drugs and dosages for various species were readily available (e.g., Heidrich and Kent, 1985; Kitchell et al., 1983; Soma, 1985; Wright et al., 1985). The new climate of opinion was summed up in one pain specialist’s comment that “one of

<table>
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<tr>
<th>Date</th>
<th>(A) Total no.</th>
<th>(B) Percent of</th>
<th>(C) Percent that</th>
<th>(D) Percent that</th>
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<tr>
<td></td>
<td>of federally protected animals used by reporting facilities</td>
<td>federally protected animals not exposed to painful or distressing procedures</td>
<td>received appropriate pain relief</td>
<td>did not receive pain relief because it would have interfered with test results</td>
</tr>
<tr>
<td>1982</td>
<td>1,576,556</td>
<td>62%</td>
<td>30%</td>
<td>8%</td>
</tr>
<tr>
<td>1983</td>
<td>1,680,242</td>
<td>61%</td>
<td>31%</td>
<td>8%</td>
</tr>
<tr>
<td>1984</td>
<td>2,074,133</td>
<td>62%</td>
<td>32%</td>
<td>6%</td>
</tr>
<tr>
<td>1985</td>
<td>2,153,787</td>
<td>57.6%</td>
<td>35.6%</td>
<td>6.8%</td>
</tr>
<tr>
<td>1986</td>
<td>1,778,403</td>
<td>59.4%</td>
<td>34.2%</td>
<td>6.3%</td>
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</tbody>
</table>

* Data are for the period October 1- September 30. This table was compiled from annual reports published by the United States Department of Agriculture (USDA-APHIS 1982-1986, *Animal Welfare Enforcement*). The USDA compiles its report from the annual reports filed by individual research facilities (see USDA-APHIS, 1982-1987, *Annual Reports of Research Facilities*).

* Until recently, "federally protected animals" included only dogs, cats, nonhuman primates, guinea pigs, hamsters, and rabbits. Birds, rats, mice, horses and other farm animals were explicitly excluded from regulation and facilities were not required to include them (or any cold-blooded animals) in their annual reports. A January 1992 court decision may mean that henceforth birds, rats and mice will also have to be included in annual reports (see text, n. 5).
the psychological curiosities of therapeutic decision making is the withholding of analgesic drugs, because the clinician is not absolutely certain that the animal is experiencing pain. Yet the same individual will administer antibiotics without documenting the presence of bacterial infection. Pain and suffering constitute the only situation in which I believe that, if in doubt, one should go ahead and treat” (Davis, 1983, p. 175).

This attitude toward analgesics can be found in at least two sets of interdisciplinary animal research guidelines drawn up by organizations with a broad representation (including veterinarians and pain specialists). One, adopted at an international

<table>
<thead>
<tr>
<th>Date</th>
<th>(A) Total no. of animals</th>
<th>(B) Percent of animals used in research, experiments, or tests involving no pain or distress</th>
<th>(C) Percent of animals used in research, experiments, or tests where appropriate anesthetic, analgesic, or tranquilizer drugs were administered to avoid pain or distress</th>
<th>(D) Percent of animals used in research, experiments, or tests involving pain or distress without administration of appropriate anesthetic, analgesic, or tranquilizer drugs</th>
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<tr>
<td>1985</td>
<td>3,413</td>
<td>8%</td>
<td>92%</td>
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<td>1986</td>
<td>2,648</td>
<td>88.9%</td>
<td>11.1%</td>
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<td>1987</td>
<td>3,942</td>
<td>28%</td>
<td>72%</td>
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<td>30,654</td>
<td>73.2%</td>
<td>21.5%</td>
<td>5.3%</td>
</tr>
<tr>
<td>1986</td>
<td>1,983</td>
<td>46.4%</td>
<td>51.5%</td>
<td>2.1%</td>
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<tr>
<td>1987</td>
<td>3,284</td>
<td>19.5%</td>
<td>77.3%</td>
<td>3.3%</td>
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* The figures in this table are adapted from the Annual Report of Research Facilities filed by each institution with the United States Department of Agriculture and obtained by the author under the Freedom of Information Act. The reporting period is from October 1 through September 30. (USDA-APHIS, 1982-1987)

b Rats and mice are included in University data for all years.

c Rats and mice are included in Institute data for 1985 only. The inclusion of data for rats and mice was voluntary (see text, n. 5).
conference on animal research held under the auspices of the World Health Organization and UNESCO, stated that "Postoperative pain should be prevented or relieved by analgesics" (CIOMS, 1983, VIII). The other is the New York Academy of Sciences' *Interdisciplinary Principles and Guidelines for the Use of Animals in Research, Testing, and Education*, which states that "Post-surgical analgesia must be provided appropriate for the type of surgical intervention" (NYAS, 1988, p. 5).

It is against this background that one must consider the almost total lack of interest in animal analgesia that I found among researchers. The subject was being treated very seriously by specialists in veterinary medicine and pain, while researchers in the laboratories included in this study were ignoring it. The point being made here is not so much that analgesics were withheld, but that so few researchers even considered the subject worth thinking about.

**USDA Data on Pain in Animal Experimentation**

Statistics compiled by the United States Department of Agriculture show that nationwide, scientists report that the majority of research animals are not exposed to painful or distressing procedures: the percentage of animals in this category has ranged from about 58% to 62% in recent years. Of the others, most received "appropriate pain relief." The percentage of animals reported to have actually experienced pain or distress, without any pain relief, ranges from about 6% to 8% each year (see Table 2). These figures are provided by the animal facilities themselves, in the annual reports mentioned earlier that are required under the provisions of the Animal Welfare Act.

Comparable data for the University and the Institute alone are given in Table 3. The years 1985-1987 represent the period during which my field work was carried out (most of it in 1985). University scientists reported no animals subjected to "pain or distress without administration of appropriate anesthetic, analgesic, or tranquilizer drugs" (Category D) during all three years. Researchers are required to attach explanations for all Category D cases; the explanations attached to the Institute's reports for these years reveal that none of the experiments in Category D was performed in any laboratory included in this study. We can only conclude that not one investigator included in the present study reported any instances of unrelieved pain for any of the experiments performed during this three-year period. These experiments included not only many instances of major survival surgery (with no post-operative analgesics), but also mice injected with cobra venom, LD-50 tests in which rats died from large doses of a toxic substance, and cancers in mice and rats. No anesthetics or analgesics were administered.
in these non-surgical situations.

Category D experiments go unchallenged by the USDA as long as a "brief explanation" for withholding pain-relieving drugs is attached. It is possible that for some investigators this is simply too much trouble, but judging from the attachments to the Institute reports, an explanation acceptable to the USDA requires precious little thought or effort. The following samples are typical, and constitute about a third of all the explanations attached to the Institute reports for 1985-1987:

- Dogs are used to study treatment of heart worms. (Annual Report, 1985)
- Rats are used in studies of aortic occlusion and Trypansoma [sic] infection. (Annual Report, 1985)
- Seventeen rabbits were utilized in 2 studies of Toxic Shock Syndrome prevention. (Annual Report, 1986)
- Forty-four rabbits were required for use in a study of Toxic Shock Syndrome prevention. (Annual Report, 1987)

In 1987, an atypical explanation also was submitted:

- Sixty-three hamsters were decapitated without prior anesthesia as anesthesia would alter neuroendocrine data. (Annual Report, 1987)

The last is atypical because it alone mentions why no anesthesia could be administered; the others simply state the general type of research that was done. The hamster explanation is also noteworthy for another reason: I saw scores of rats and mice decapitated without anesthesia at both the University and the Institute, as well as unanesthetized mice killed by cervical dislocation or a blow to the head. And yet none of these researchers made any entries in Category D on their annual reports.

Since the USDA data reflect only the scientists' own evaluations of animal pain and distress in their research, these figures cannot be used to "prove" that there is very little painful experimentation. All they show is that researchers report very little painful experimentation. When the biomedical research establishment uses USDA figures uncritically to refute complaints about animal pain, as the American Medical Association did in a recent white paper, one cannot but wonder if the authors are really as unsophisticated as all that. The AMA paper smugly states, "The fact that most experiments do not expose animals to pain was confirmed by a report issued by the Department of Agriculture . . ." (AMA, 1989, p. 17). This gives the impression that the USDA conducts independent evaluations using standardized criteria, which is far from
the case.

One can easily understand why scientists might not want to fan the flames of the animal research controversy by reporting many Category D animals. Animal rights activists can easily obtain copies of these reports under the Freedom of Information Act—just as I did—and target individual research facilities for harassment. These fears probably underlie some decisions to report animals in Category B (no pain or distress) rather than Category D; and to put all animals that received anesthetics in Category C (pain relieved by drugs), regardless of whether analgesics had been withheld. However, the researchers I studied appeared convinced—and they clearly hoped that by opening their laboratories to me, I would also become convinced—that nothing painful or distressing was going on.

Over and over researchers assured me that in their laboratories, animals were never hurt. “I love animals... I would not feel that I’m doing the right thing if I would do anything to animals that is not being done to human beings,” said one. “I do believe in not causing pain to them,” said another. “We certainly aren’t inflicting pain on the animals,” said a third. Another insisted, “I limit the kinds of experiments that I think about [doing] to those that are not going to cause pain and suffering to the animal.”

Scientists could tell me these things with apparent conviction because they defined pain and suffering very narrowly. “Pain” meant the acute pain of surgery on conscious animals, and almost nothing else. Most felt that their humane obligations were fulfilled when they relieved that pain with anesthesia. Although the USDA reporting forms refer to “pain or distress” and ask for information regarding “anesthetic, analgesic, or tranquilizer drugs,” no annual report for any of half a dozen research facilities that I examined ever included a category D explanation of why analgesics were not administered. As we have seen, one certainly cannot assume that this is because analgesics always were administered.

**Conclusions**

The scientists I studied were full participants in “the modern sensibility.” There were no latter-day Cartesians among them who claimed that animals do not feel pain. The majority of them had pets at home, with whom they seemed capable of empathizing enormously. But their pets were individuals whom they knew by name, and whom they would never use in an experiment. Laboratory animals were (usually) nameless, de-individualized creatures, whose sole purpose in life was to serve in a scientific
experiment. Researchers continually made distinctions between lab animals and pets, on the one hand, and between lab and wild animals on the other.

Although researchers always acknowledged the ability of animals to feel pain, this knowledge remained an abstraction for most. Scientists rarely saw any pain or suffering in their labs. Their view of lab animals as statistical aggregates overshadowed any perception of an individual animal’s feelings at any given moment. And when I went beyond the issue of physical pain to ask about psychological or emotional suffering, many researchers were at a loss to answer. Typical was the comment of one neuroscientist who, when asked about possible boredom of monkeys kept in bare metal cages, answered with a palpable lack of interest: “We can speculate about these things, but I think it’s pointless.” Another responded more impatiently: “Oh, how would anybody know that? I mean, anybody? How could anybody know that? There’s a danger of being anthropomorphic about anything. I just, I wouldn’t even venture a guess.”

The savage and the drunk of yesteryear find their counterpart in the 20th-century laboratory, but not because of any simple belief that the lab animal is insensitive to pain. Laboratory animals are categorized and perceived as distinctive creatures whose purpose and meaning is constituted by their role as bearers of scientific data. Researchers believe that all animals are capable of feeling pain, but what they actually see when they look at lab animals is a scientific objective, not the animal’s subjective experience. The result is that it rarely occurs to them to consider whether an animal is in pain, is suffering — or whether it is feeling anything at all, outside the boundaries of the research protocol.

Notes
1. Direct all correspondence to the author, The New York City Criminal Justice Agency, 305 Broadway, 5th Floor, New York, NY 10007. This article is based on a doctoral dissertation in the Department of Sociology, New York University, 1991 (Constructing Laboratory Animals: An Ethnographic Study in the Sociology of Science, chapter 7, "Pain and Suffering," pp. 221-277). The dissertation research was supported by a grant from Sigma Xi, the Scientific Research Society. For helpful comments, the author wishes to thank Irwin W. Goffman, Richard Sennett, Jeri A. Sechzer, Dorothy Nelkin, and James Jasper.

2. See, for example, Turner (1980). Other historians have traced the development of empathy to earlier times; see Thomas (1983) and Engell (1981, pp. 143-160).
3. Permission to conduct this study was granted by the Institutional Review Board (IRB) of each institution on the condition that the names of the institutions and the individual participants be kept confidential. IRBs at four additional institutions rejected my proposal, on grounds that generally boiled down to anxiety about bad publicity and harassment from animal rights activists. Concerns about anonymity were so strong at the places where my proposal was approved that I was required to keep the identities of the institutions and individual participants locked in a safe deposit box in a bank for the duration of the study.

4. For a full description of the methods used to select and recruit study participants, the procedures used to collect data, and a discussion of the generalizability of the findings, see Phillips 1991, pp. 40-69.


6. In pain research, of course, scientists often subject animals to pain without anesthesia because of scientific "necessity," and the researchers I talked to did think this is justifiable. However, pain research usually involves methods of inflicting pain other than surgery (e.g. electric shock). There were no researchers working in the field of pain research participating in my study.

7. These researchers' information was apparently outdated. Davis (1983, p.173) writes that "much of the past reputation of morphine in cats resulted from overdose. Several generations of veterinary students were taught that the use of opiates in cats was absolutely contraindicated because of the mania that high doses of morphine produces in them. At a dose of 0.1 mg/kg, morphine provides analgesia (without excitement) lasting 6-7 h[ours]." Another text confirms that current thinking on the subject is that morphine (and Demerol) are suitable for cats (Hughes and Lang, 1983, pp. 209-210).

8. I cannot explain the wild fluctuations from year to year, especially for the University, in the percentage reported for Categories B and C (table 3). There is no apparent reason why the University's researchers should report only 8% for Category B in 1985 (compared to the national average of 57.6%) and why that figure should shoot up to 88.9% for 1986 (when the national average was 59.4%). The Institute's figures show wild swings, too, but they are not as extreme and they are in the opposite direction. I believe that this reflects the arbitrariness of researchers' judgements about which
category to which assign animals, and it certainly raises questions about the national figures.

9. This is Category E on the USDA report forms. I have rearranged the tabular presentation and re-lettered the categories.

References


