A Feeling for the Animal:
On Becoming an Experimentalist

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Abstract
This article deals with questions that arose during a 2-week university course in nonhuman animal laboratory science. Doctoral students and researchers take the course to acquire the knowledge necessary for future independent work with nonhuman animal experimentation. During the course, participants learn to handle animals in the laboratory, both in theory and in practice, and to do so in a humane way with a feeling for the animals. The paper analyzes how this knowledge, in other tacit contexts, is constructed and learned and focuses on two main aspects of handling rodents in the laboratory: habituation and killing. The course's focus on good handling works as a means of doing good research, as a strategy of including animal welfare as a legitimate agenda, while keeping intact traditional scientific norms—such as standardization. In this case, standardization has a wider scope than commonly assumed: Not only are the animals standardized but also the experimentalists who become standardized through courses and curricula. However, this process of standardization is not complete; thus, a feeling for the animal implies, as the case study shows, individual animal and human-animal interaction.

Keywords
animal welfare, nonhuman animal, laboratory studies, STS, human-animal relationships

Introduction
“Good morning, humans,” the teacher says to the students and starts the lecture, continuing: “You may think it's a funny thing to say, and actually it is, but for a different reason than you think. How can I actually know that you are humans?” If you did not know the context of this introduction, you might think the above quote was excerpted from a dog-training class, a group of new-age scholars, or a lecture in philosophy. Actually, it was taken from a Swedish university course in laboratory animal science, sometimes called comparative biology. The course is mandatory for all people who plan to work
with nonhuman animals in the laboratory: Researchers, PhD students, and—occasionally—science studies scholars like me.

I enrolled in the course to learn more about the handling of animals in the laboratory, as a part of an ongoing project concerning dilemmas associated with transgenic animals—that is, animals who have been subjected to genetic modifications. In order to continue my project, I needed the licence that this course could provide. This would be my ticket to the backstage of animal experimentation and, as such, also provide a methodological advantage that could deepen my understanding of what it means to work with laboratory animals (Arluke & Sanders, 1996, p. 25). It was not just on a discursive level that we were supposed to “get to know” the animals in question—both rodents and larger laboratory animals, such as dogs, pigs, and sheep; the course also included some hands-on experiences (but only with mice and rats). We were taught to restrain, anesthetize, and euthanize. We were taught to take blood samples and give injections. In addition, we were taught to do all this in a “humane” way: In acquiring the knowledge necessary for future independent work with animal experimentation, we were fostered to “handle with care.”

Since its founding in the 1950s, laboratory animal science has grown as a research field and has lately also been established in Sweden as an obligatory course for all people planning to work with animals in the laboratory: animal technicians, laboratory assistants, students, and researchers. Laboratory animal science is multidisciplinary and brings together a range of issues such as genetics, metabolics, virology, ethology, husbandry, ethics, experimental techniques, and design. At this particular university, the course has been offered in its current form since the early 1990s but has had predecessors in various forms. The course follows the curriculum standards set by the Federal European Association for Laboratory Animal Science (FELASA). According to the mission statement on the home page of the organization, one aim is to promote education for animal experimentalists on different levels (A-D):

One of FELASAs’s main activities is to drive the process of continuing implementation of refinement in the husbandry and use of animals in research as well as design of animal experiments. These go hand-in-hand with good science. FELASA encourages professional competence in all staff working with animals as a prerequisite for implementation of the 3Rs and for high quality science. (FELASA, 2007)

The objective of laboratory animal science is to promote good research using animals in the laboratory through increased awareness of welfare issues; that is, both quality in research and quality in animal welfare. These issues are said
to go hand-in-hand; the well being of animals will secure sound and valid results. This mutual figure (happy mice and good science) has become rather dominating and is constantly rehearsed in legislation, ethics-committee guidelines, and scientific publications. One of the most renowned Swedish figures in this field, Öbrink, states in his and Waller’s (1996) textbook of laboratory animal science: “Working with laboratory animals in bio-medical research requires both knowledge and a feeling for the animals” (p. 13) [author’s translation]. It is this sense of “feeling for the animals” that I will further explore here, aiming to investigate how the preferred method of handling animals in experiments is constructed and learned.

In the present paper, I will focus on two main interrelated dimensions of learning to handle laboratory animals: habituation and killing. I will make use of my own experiences and field notes from this two-week course, together with an analysis of qualitative interviews that I conducted with four fellow course participants and two of the teachers. The interviewees are anonymous and were given the opportunity to read and comment on their own interview transcripts. Before considering the empirical findings, I will give an overview of the theoretical framework used.

Learning Scientific Practice with Rodents

Until the past two decades or so, the sociology of science has focused mainly on the production of scientific theory and knowledge. That is, most attention has been devoted to the social aspects of knowing, by way of concepts such as paradigms, fact construction, and—more recently—on mode-two knowledge production. However, the sociology of scientific knowledge has faced a great deal of critique. For example, it has been argued that the focus on written documents and their inherent theories has overshadowed what scientists actually do and, as a consequence, has not seriously addressed the issue of scientific culture. Scholars such as Latour and Woolgar (1979) and Knorr-Cetina (1981) have instead set out to see how science is done in bench laboratories. They have set the standard for a whole era of science and technology studies (STS), in which scientific practice and cultural meaning are scrutinized in every possible detail. “Culture,” in Pickering’s (1992) words, defines “the field of resources that scientists draw upon in their work, while ‘practice’ refers to the acts of making (and unmaking) that they perform in that field” (p. 3). I find this a useful definition, in that it offers a rather clear-cut difference between the two concepts, a difference that is of some analytical value. In real life, the difference is often not so obvious—and I understand these cultural “resources” as consisting of, for example, metaphors and other symbols.
Turning now to laboratory studies focused on scientific knowledge production that is derived from the relationship between humans and nonhuman animals, we find a growing body of literature, from Lynch’s essay (1988) onward. In his article, Lynch found that animal researchers, by way of different rituals, transform the laboratory specimen from a “naturalistic” into an “analytic” animal. This is done in a highly profane environment—the laboratory—but at the same time in a sacred discourse surrounding the metaphor of “sacrifice.” Lynch is not particularly interested in the animal in question—the rat—but focuses more on the process of knowledge production.

However, Rader (2004), Michael (2001), Haraway (1997, 2008), and Birke (1994, 2003) have made significant contributions to representing the rodent in the laboratory. Mice and rats, the key models for humans, are often highly invisible, not just in biomedical texts where they are represented by statistics or other literary inscriptions but also in the genre of science and technology studies (Harvey, 2006). In the process of becoming a model for humans, the animal becomes de-naturalized and abstract (Birke, 2003, p. 218). However, an animal model is not only an abstract representation of a particular biological process but also the carrier of a load of ambiguous cultural baggage; thus, the model can be interpreted in a variety of ways. Between the model and the object of matter, a space for negotiation is created, and the outcome of these negotiations in some way or another depends on the relationship between humans and the particular species in question (Birke, Arluke, & Michael, 2007; Franklin, 1999; Haraway, 1989; Holmberg, 2005). The mouse, to begin with, has become a metonymy for laboratory experimentation, scientific progress, and salvation from human suffering (Haraway, 1997, p. 79). However, mice also connote vermin, pest, dirt, contagion, and plague. Thus, laboratory rodents can at once be “dirt personified and they can symbolize the eradication of disease” (Birke, 2003, p. 220). Birke claimed that laboratory animals, owing to the many and often contradictory meaning constructions, suffer from being “doubly othered”—first, in relation to humans and, second, in relation to all other—both domestic and wild—animals (p. 207).

Herzog (1989), himself a biomedical researcher, noted that the mouse in the laboratory does not have a very high moral status and that—depending on the function of the animal—this status also varies. There are “good” and “bad” mice, and they are treated differently and within different regulatory bodies, depending on whether they are defined as research objects, food for other animals, or mice on the run. Rader (2004) described how laboratory mice at the famous Jackson Laboratory, JAX, have literally been constructed. She showed how the mouse has become the model organism of twentieth century biomedical research, as a consequence of historically and culturally specific
choices and contingencies. Starting from this background, I will ask questions concerning laboratory rodents: How are they understood, handled, and constructed?

Yet I also want to enquire into the interaction between humans and rodents in the laboratory setting, thereby opening the field to a view of human-nonhuman interaction. Sanders (1999, 2003) has studied interaction between dogs and their people—mainly in working situations—and writes that they continuously exchange non-verbal symbols. Humans and dogs come to share common interpretations of the meaning of certain symbols. This cannot be viewed simply as a dominance relationship, in which the human is controlling the dog. Over and over, Sanders (1999) shows, it is the dog who shows the human how to behave through cross-species interaction. A related perspective comes from social psychologist Myers (2003), who has criticized Mead and his view on language as a basis for self-consciousness and reflexivity (p. 56). Instead, Myers’ view is that this is a skill not exclusively developed within language and in relation to other language users. He writes that language certainly is a necessary, but not sufficient, basis for self development and discusses the possibility of understanding other animals through bodily symbols and, what Shapiro (1997) has named, “kinesthetic empathy” (p. 60). The argument goes that we can understand and communicate with other species in a similar manner as we do between humans; through interpretation based on interaction. Haraway (2003) shows how human-dog working relationships are historically and culturally contingent. She uses the figure of “companion species” to expand insights from these relationships to enable understandings of other cross-species relationships and to call for more relational ethics (Haraway, 2008). The advantage is of course that people like Sanders, Myers, and Haraway seriously consider interaction between humans and other animals and raise somewhat troubling issues for social science. Can these insights from studies of working relationships with dogs be used to study laboratory interaction with mice and rats? In addition, how can we understand human-rodent interaction in this particular context?

In this paper, I am also interested in finding out how the cultural norms and practices of animal experimentation are taught and learned. For this purpose, I rely on learning theories, especially concerning the concept of “situated learning” (Lave & Wenger, 1991). Learning has traditionally been thought of as an act of “acquiring” knowledge, typically through the transferring of facts from teacher to student. In the context of situated learning, knowledge is ideally pictured as being constructed through a process of “participation.” Obviously, what actually goes on in practice—also in this particular course—is both the transferring of facts in typical university lectures, on the one hand
and, on the other, the negotiations and constructions of knowledge occurring in the practical sessions, (Sfard, 1998). According to Lave and Wenger, people learn from each other in particular social contexts, what they call “communities of practice.” Of special interest here is that participants in these communities of practice often learn what is considered tacit knowledge in an organizational culture; consequently, I will pay special attention to the context of learning: How do students learn the norms of good animal experimentation?

In summary, I will draw on the literature on scientific practice with animals, general animal studies, and on a learning perspective to highlight (a) how the relationship between humans and laboratory rodents is enacted and (b) how laboratory culture—in this particular sense—is taught and learned.

**Handling Nonhuman Animals**

Okay, so now we've done (almost) the same procedures with the mouse as we did with the rat last week. First, we got to lift and move the mouse by the tail to the cage bar, so we could grab it by the scruff of the neck. I thought it was really hard! It moved around and I lost my grip several times. XX [the teacher] told me to take a deep breath and to take a walk around the bench to calm down. It felt like I needed to make a decision. Then it was easier. (Field notes, November 23, 2006)

“Handling” is a highly important element of animal experimentation; if you cannot handle the animal, it will be difficult to get reliable results from your experiment. But, as Lynch (1988) stated, the actual handling of animals in laboratories is very much a kind of tacit knowledge, or “common sense” (p. 280). Some people are especially good at it, and this is often mentioned in the corridors or over the laboratory bench, but this kind of knowledge or skill is never acknowledged in, for example, scientific papers (Lynch; Birke et al, 2007; Wieder, 1980). In that sense, the skills involved in working with animals are made tacit, even though they are often a prerequisite for a reliable experimental outcome. Furthermore, handling of animals is often said to be the most likely factor in generating variability in experimental results. One of the teachers of the course puts it as follows:

I: You have to… and this is something I preach in these animal ethics contexts: you have to know the kind of animal you’re handling. And there, this concept of “handling” becomes very important. The greatest variability, next to the genetics, comes from how you handle the animals. How I catch the animals, how the animals relate to the animal technician and to people who are about to handle it, this is a source of variability, thus, and there are loads of studies in which people have tried to make…
standardize the experiments and tried to make them absolutely the same and then they end up with great variability. And when they go into these large datasets and look, then it’s the factor, it is handling. How did I pick up the animal? Did I lift it by the tail or did I catch it with my hands and so on.

T: And that, you mean, that simply results in needing to use more animals?
I: More animals and greater variability and then, the results perhaps aren’t so reliable.
(Interview with Teacher A)

When we look at a particular culture, common sense is a highly relevant aspect to investigate because what is considered to be the norm is seldom explicitly spelled out. That is why this specific approach is so fruitful; in a learning context, tacit norms become articulated and made more explicit. In this unique material, I can trace how the preferred kind of handling of animals is constructed and learned.

Habituation

One aspect of handling is “habituation,” which in laboratory contexts means letting the animal in question get used to you, in order to reduce stress and make the animal “easier to handle.” For example, in one lesson on experimental surgery, the teacher said—to reduce stress and other complications—it is very important that the animal in question get to know the experimental environment and the experimenter in advance. Handling should be “confident, gentle, and firm.” You are not allowed to use violence or force but are supposed to make the animal do what you want anyway: “Afraid and aggressive animals are avoided as experimental subjects” (Field notes, November 13, 2006). This is one side of the habituation coin. The other is that I and my fellow experimentalists-in-the-making must also become habituated to the laboratory animals. To get the right grip, we must get to know the animal.

I: Because, during this course, it’s the only moment we can guarantee that there are skilled instructors available. It’s not… at all sure, rather, it’s almost certainly the case that there are no people out on the research departments who can train a person. And, likewise at companies, so there’s, it’s not at all certain there are people who can train the ones who need to do interventions. So, that was the reason we added these practical classes; blood sampling, injections, and handling. In the first courses, they didn’t even get to handle the rats, they got to look at them and watch others doing it.
T: Mmm.
I: And… those classes have been the most popular all the time, and the ones, the ones students want more of. And that must mean that they, they are considered useful. We are pretty convinced that it’s sensible to teach this, that it’s worth it: one mouse and one rat for each person… to train these things. Especially since we do these interventions under full anesthesia, so there’s no pain. (Interview with Teacher B)
To this end, we start by handling rats, because they are “much nicer than mice, more docile, and they don’t attack” (Field notes, November 13, 2006). However, before handling real rats, we start with a rubber rat; I simulate it smelling my hand, then after a while I pick it up, carry it on my arm and practice different restraining techniques. For those of us who lack experience with live rats, this is a valuable experience. After this, we practice different experimental techniques on the dummy: blood sampling, injections, and gavage feeding. The day after, we get to do the “real thing,” and I can tell that the rubber rat has been helpful to some degree, but we are still very excited:

We’re gathered outside an anonymous door in the basement, around 15 people, all waiting to get in. Everyone seems a bit tense (or, it’s just me, and then I think everyone else is too (Field notes, November 13, 2006)

Now we will learn in practice how important it is to be calm and confident. We are divided into groups of four or five plus an instructor and gathered around a bench. On each bench, there are cages with rats. Each and every one of us gets a rat to practice with. Mine is quite squeaky and jumpy, while the others’ rats seem to be much more relaxed. I am offered the chance to exchange rats with my neighbor. I hope to get a calm one; to my disappointment, the new rat starts jumping around. Obviously, I am doing something wrong! I watch the others and see that they are acting confidently—scratching and nibbling, patting and making reaffirming sounds. One of my informants from the course, well experienced in doing research on pigs, reflects on the double importance of habituation:

I: You try to do it in a way that makes them not so fearful. You scrub them a little bit, and you try to be kind to the pigs, so that, then, even the pigs can accept the situation. I think it’s the same as we’ve done in the practical… lecture here, with the rats. There’s no big difference. It’s a little bit different, different method, but not so different at all. So.
T: Same principle.
I: The principles are the same, the methods are a little bit different. But you always try to be as kind as possible, to the animals, so that they have no fear and no stress. Not only because of the variability in the results, it’s also from your own mind, that you want to do it.
T: For your own sake?
I: For me. And for, all of the staff at my department, I have to say. They have taught me to be kind to the animals. (Interview with Student A)

Either you learn good handling from the communities of practice that you engage in at work (“all the staff at my department”), or you learn it in this particular course. But there is one more alternative available:
T: Do you think having animals of your own, at home, helps you to... handle laboratory animals?
I: Yes, I think so.
T: In what way?
I: I think you, especially when you handle animals which... when you do experiments on awake, conscious animals, then... it is quite important that you have some kind of understanding of how animals react, don't believe it's mostly like with humans. So that you really treat them for what they are.
T: Mm.
I: You have to understand each other, that's something I've learned with the horses, you have to understand.
T: It's complicated.
I: I cannot claim that I've taken any courses to learn, but it, I feel self-taught in this area. It's probably a matter of, of having the right kind of empathy.
T: Mm.
I: I don't know if I can be clearer on this. It's an experience, you learn, if you return to the horses, you learn which, what behavior from me works with the horses, they kind of answer the way I want to.
T: Right, it's the same with the rats then.
I: Yes, absolutely. It doesn't turn out the same, but similar. You have to learn.
T: But the same principle, that you have to learn from
I: Yes, you have to find out what works and what doesn't. Of course, you can do that from courses, and you can learn from your own mistakes. (Interview with Teacher B)

Learning by doing is what is recommended here. In this and other interviews, it is put forward as an advantage to have prior experience of companion animals, and the animals’ actions inform the fruitful response (“you have to learn what works and what doesn’t”). It is an experience you can gain formally (for example in this course) and by doing. But it is also about having the right kind of “empathy”.

T: I was just about to say
I: ]if you don't have knowledge about animal behaviour, well, then the animal becomes an “it”. It becomes, it's almost like returning to the animals as black boxes, and that's not good. If you don't have animals at home, then it can easily be...
T: [...] Mm, but do you think it affects the approach of the researchers?
I: I believe it affects them very much too... if they don't have contact with the animals, then the animals become black boxes to them. (Interview with Teacher A)

It is quite interesting that two of the course teachers consider it so important to have experience of companion animals in order to become a good experimentalist. This finding can be contrasted to the discussions of Birke et al., (2007) by which they claim that researchers distance themselves from the individual, naturalistic animal when doing experiments. To maintain the scientific, objectivist identity, the researchers interviewed in the author’s different
studies differentiate between their relationship with pet animals on the one hand and laboratory animals, on the other. In my case, companion animals are brought into the scientific discourse.

I will conclude this section with a quote, illustrating the importance of having a feeling for the animals with regard to the prospect of future laboratory work:

I: As a general rule I think I’d have a problem with everything, so, it’s not easy to do experiments on animals. It’s not something you do without thinking first: why are you doing it and I need to maybe end this life for this experiment because this is, the question I have is maybe important and, not maybe, but you have to be sure.
T: Mhm. [pause] It sounds difficult to, if you have this thing, if you have this…. How shall I explain, if you have this belief that it is difficult and it is wrong.
I: I didn’t say it’s wrong
T: No, you didn’t say that, right.
I: It’s difficult.
T: Difficult. Then, how do you think it will be…. doing this?
I: Yeah, the feeling I get now, when I’m going out in the animal department, is that some of the procedures are barbaric; maybe we could find some better way of doing it. I think most of the people doing it are thinking the same things, and… that’s why some new solutions come up. (Interview with Student D)

In this section, I have investigated how the otherwise tacit knowledge of good handling is learned, both through a continuous “acquiring” of knowledge in traditional lectures and through “participation”—learning from each other and from the instructor in small groups. Regarding the latter context, the “communities of practice” also include, other than students and teachers, animals “at home” and, last but certainly not least, laboratory rodents. If we are to understand the situatedness of learning a scientific culture, it is crucial that we analyze the interaction between humans and nonhuman animals.

“Habituation” is an interesting term in this context. It connotes “getting used to,” turning “accustomed” to a situation. Moreover, it refers to the process of getting a habit, the routine of ordinary practice. It also connotes to Bourdieu (1984) and his concept of habitus—the embodied set of dispositions of taste and practice. By this cross-species rehearsing of the preferred way of handling, we habituated with the rodents and incorporated this practice into the experimentalist habitus. My fellow students and I learned from interaction with the animals: how to lift, how to constrain, and how to inject. In short, we learned how to handle; however, the rats also learned. During the second practical class, the rats were generally much more habituated. That was when we were taught how to kill.
Killing Animals: Dead Mouse Walking

I have given a lot of thought to the ethical aspects of killing a rat just because I want to learn about the procedures, even though I don’t need to. However, somehow you get the perspective: Half a million animals are used annually, just in Sweden. This rat will not be set free or live to grow old, just because I want to skip out. I think many of us thought it was unsettling that we first cuddled with the rat and then put the rat to death. It felt like cheating! (Field notes November 17, 2006).

When we change context from habituation to killing animals, one can expect, based on the bulk of literature on animal experiments, that the animal welfare and good handling approach, explored above, will give way to a somewhat more technified discourse (Arluke, 2001; Birke, 1994, 2003; Michael, 2001). In this section, I will explore in some detail the tension between both the idea of good handling and habituation and the technicalities of killing.

Lynch (1988) claimed that the often-occurring “sacrifice” metaphor makes perfect sense in laboratory practice. In addition to the obvious—that the animal serves the “higher” interests of science—sacrificing an animal means that a set of rituals transforms the animal from a living, holistic “naturalistic” animal into an “analytic” one: in that sense, a sacred object of technical investigation in the scientific cosmology (Asdal, forthcoming). Lynch writes,

> While the mundane laboratory animal is not transformed into a sacred object per se, its material body and the interpretive sense of that body are radically transformed through a series of preparatory practices which turn the animal into the bearer of a generalized knowledge. (p. 266)

Now, in Lynch’s (1988) case, the rats used for basic neurological research are bred, raised, killed, dissected, and prepared for a specific purpose: to eventually find out more about Alzheimer’s disease. In an interview with one of the students in the course, we talked about different definitions of “animal experiments” and I asked the person:

T: Are you doing animal experiments?

I: [pause] Indirectly, I do… because I… take the organs from the animals […] so indirectly I do, and I mean, just because you culture a cell-line which comes from an animal, you can say that you’re doing animal experiments because once upon a time it was an animal that, that… donated, or they haven’t donated, but they have been sacrificed in order to get that cell-line (Interview with Student B)

In this quote, the person connects the living animal with the analytic object of research (the cell-line) through the metaphor of sacrifice. “Donation” is used first but then corrected (“they haven’t donated”).
Sacrificing animals in biomedical research has long been a popular metaphor. From my experience in the field, however, the quote above is a rare exception: Sacrifice is not a commonly used metaphor. This may have to do with the historical context—Lynch (1988) conducted his original study in the 1970s—or with language or with the context. Instead of “to put down,” “euthanasia” or the more technical term “endpoint” is used to describe all the different acts that lead to the death of a laboratory animal. We discuss below a particular experimental procedure that I witnessed the week before in which the research team had killed, dissected, and prepared 12 mice. I call the person who did the dissection “A”, and the person who did the killing “B”:

I: So it was eh… [pause] The my part of the procedure wasn’t so eh… so hard to do.
T: Mm. But I think, like later on, if you’re going to do for example what A did last time, eh… How will you…
I: What A did, that would be fine. I think you have it like eh… like eh… something you should do, but what B did [laughs], that would be hard to do.
T: Oh, you think so?
I: Mm, still.
T: Why is that, then?
I: Yeah, because we did it on anaesthetized mice, these procedures, so it was easy here. Yeah [laugh]. But if you need to do it, you’ll do it.
T: Mm.
I: Could you do it? [laugh]
T: Me? No! [laugh] No, I don’t think so. But you say that if you have to do it, then you’ll do it.
I: Mm. (Interview with Student C)

Now, the actual act is not explicitly mentioned, but we both know what is being referred to. It is interesting to note that the interviewee says that it was okay doing “it” in the course, on an anesthetized mouse, but “it will be hard to do” on mice who are awake, unless “you need to do it, you’ll do it”. What then constitutes a situation in which one has to do “it”? In the quote above, I was asked whether I would do “it” on a mouse who is awake; very quickly and without hesitation. I responded in the negative. What constitutes the difference between killing a rat and a mouse in the course (which both I and my interviewees did), for no higher cause whatsoever and killing the animal in a laboratory, where the mouse’s fate is to serve knowledge-production that can eventually help us understand chronic illness? The difference here seems to be that it is easier to do “it” when the animal is asleep.

T: Was it anything that you thought was difficult [in the practical labs]?
I: [pause] Eh… they showed us how to do it, at first and it was nice that you repeat it. That you saw how to do it and after you repeat it, so… at first when I saw from the lecture what we were going to do, like to make, to put the sample, injections and so
[deep breath] I thought it would be very difficult. But after the practice, it wasn’t so difficult.
T: Mm.
I: Eh, it was difficult to . . . give the injection, the euthanasia injection. It was difficult. Like just the feelings, not the procedure.
T: Yeah, not the technical thing. But the feeling, what . . . what was the feeling?
I: Like you . . . shouldn’t think about it: now you’re killing the animal. You should just think that you’re doing the procedure. But still, you have it somewhere: that now you’re killing. But . . . yeah . . . the rat was . . . was anaesthetized, so . . . he slept and it was like . . . more humane than if they were eh . . . alive or yeah. (Interview with Student C)

The interviewee states that even though the procedure is rather technical and quite easy, the feelings are still there ("it was difficult . . . the feelings"). Even if you try to think it away, it is difficult to give the "euthanasia injection." However, and this is significant, it is easier—"more humane"—to kill an anaesthetized mouse than an "alive" mouse. This Freudian slip is telling: A rat who is asleep looks dead and can thus be treated as such. One could say that the animal is socially prepared for death (Mulkay, 1993). The phenomenon is discussed by Birke et al., (2007), and they understand it as a strategy or "absolution" for students to go through with dissection. The animal in question is destined to die and thus in a sense is "already dead" (p. 85). This can be understood as a form of "dead mouse walking." The next quote illustrates the point: I asked whether the procedures used on rats were what the person expected:

I: Yes, exactly, but it was almost like I’d expected, it wasn’t like, I still thought it was a little uncomfortable when you were about to go there and do it. But then, on the other hand, I thought, but then again it was probably also what I’d expected, that when the rat was finally asleep . . . then I didn’t find it as uncomfortable any longer.
T: Why is that then, do you think?
I: [pause] Well. You know, it was like this, that they are actually conscious at first. Or, kind of, yes, when it was finally asleep it was okay. But then once and awhile it hit you, or right, that still you remembered all along that "wow, it’s actually a living, it’s alive". (Interview with Student B)

The technical procedures—like blood sampling and giving injections—take the focus away from the animal body (whom Lynch called the "naturalistic animal") and transform the animal into a scientific object. Moreover, the potential unease associated with doing these procedures disappears when the rat is fully asleep, and you have to remind yourself that the rat is "actually alive." Then, after all the procedures are done, those of us—whose rats are still alive after the treatment we put them through—have killed the rats twice: first, by lethal injection and, second, by dissecting out the heart. However, the
procedures for mice were somewhat different; they were killed by way of “cervical dislocation” meaning that their necks were broken.

One of the students reflects on the practical procedures and how good the training is for one’s future as an animal experimentalist:

I: Before getting into the experimental animals, I have to be sure about what I’m doing.
T: So, it was a good…
I: … for me, it was a good thing. Because I’m going to do this. A good thing, but, yeah, difficult to bear with the killing. Yeah.
T: Mm [pause] (Interview with Student D)

I think this quote nicely captures a central dilemma: To get sound results, you need to see to the whole animal; however, when it comes to the actual killing, it is difficult to handle. To me, it is quite telling that the sacrifice metaphor is not in use in this context. Instead, euthanasia is the dominant metaphor in this English-speaking course. Why is that? On the surface, it appears to be an impossible contradiction: Students first learn about habituation, the tacit knowledge and embodied practice of good handling and then—through technical procedures—reduce the animal to a thing, an object. However, it is only within this specific context—learning how to become a good experimentalist—that the contradiction appears as such. In “real life,” in laboratory practice, good handling is a means of meeting good scientific standards; in this respect, killing becomes an integrated part of good handling (and is referred to as a “humane endpoint”).

“Euthanasia” is a Greek word that refers to “good death,” literally helping someone die in a painless and “humane” way with a minimum of stress Wikipedia (2007). In addition to criteria considered to be important to the animal’s having a good or “gentle death” Close et al. (1997) stress that good methods should be simple and safe and “aesthetically acceptable for the operator” (p. 295). That is to say, a gentle and humane death for the animals also includes the experimentalists’ feelings, something that is quite obvious from the quotes above.

Animal-ethics philosophers have argued that the metaphor is misleading and should not be used to describe the killing of animals in pet shelters or veterinary practice, unless it is done in the interest of the animal (Nussbaum, 2004). Now, my point here is not to judge whether it is an apt metaphor. Instead, I am interested in the cultural tensions and the meanings displayed by the use of this term. Animal-studies scholars have shown how the killing of animals is a highly ubiquitous affair, yet the cultural norms of Western society proscribe it to be invisible. This accounts for the many euphemisms that are
used to describe “it”: culling, sacrificing, putting to sleep, and—not least—euthanizing (The Animal Studies Group, 1996, p. 3).

In short, killing animals is a dilemmatic enterprise; consequently, those who work with this use different coping strategies (Arluke, 2001; Swabe, 2000). Lynch (1988) and Birke (1994) have argued that for experimentalists to kill, the animal needs to be objectified and denaturalized. In a similar fashion, it has been shown how animal shelter workers make use of an instrumentalist discourse to justify the killing of healthy, abandoned pet animals (Palmer, 2006). Others again argue that the contradictory notions of empathy and instrumentalism are always present; the strategies are never complete. Arluke (1998) showed how experimentalists sustained ambivalent notions of dogs in the laboratory as scientific objects and pets, which enabled them to understand and justify their actions as humane killing.

In this particular course, killing rodents can be done in a gentle, “humane” way by using anesthetics. The learning context, including the euthanasia metaphor, enables students to both habituate and kill with a feeling for the animal. The feeling for the animal also includes a feeling for that animal’s death.

Discussion: A Feeling for the Animal

As stated in the introduction, my wish has been to explore what the feeling for the animal is—how it is constructed and how it is learned. It is in this specific learning context that the tacit knowledge of good handling becomes visible. During the course, we got to know the animals in question—the focus being on rodents—on many levels and with regard to many dimensions. The natural history of rodents was taught, along with their physiology and behavior, genetics, and social life. Problems such as infections and aggression among mice were brought up, as were issues concerning the housing of the animals and, of course, the regulatory body and ethical apparatus that surround animal experimentation. To minimize the variability in experimental outcomes, one must ensure all aspects of the experiment—including all possible variables concerning the animal—are taken into consideration. This approach is not only a superficial discourse on animal welfare and good laboratory practice but also a repeated and consistent thread. For example, during one of our practical exercises, we were supposed to take a series of blood samples and make some injections. In order to do this properly, we needed good lighting. However, as we also had been taught in a previous lesson on comparative rodent biology, too intense light is not good for rodent welfare. Consequently, the teacher simply switched off most of the lights until the rats were fully anesthetized. Based on
This culture of good handling typically breaks with the technified, reductionist kind of scientific culture and practice that have been described by STS scholars and animal-studies researchers. Consider Lynch’s (1988) experimentalists, who swung rats by the tail to make them so dizzy that they wouldn’t defend themselves against injections. The culture of animal experimentation that is learned through practice in the course studied here is somewhat different, and one question is how we are supposed to conceptualize this culture. It is not sufficient to suggest that it is merely the passing of time (since Lynch’s study) and increased enlightenment that have erased inhumane behavior. The participants in my study use somewhat different techniques for constraining rodents, but I think the decisive difference here, compared with other studies on laboratory practice, is the focus on learning good handling as a means of doing good research. One can of course apply a rather evil-minded interpretation and say that the discourse on “animal welfare” merely serves as a device to help students justify experiments with, and killing of, animals. However, we can also understand it as a strategy of including animal welfare as a legitimate agenda, while keeping intact traditional scientific norms (for example concerning standardization, see below).

One obvious connection to the feeling for the animal culture that I have sketched out here, though not quite the same, is the “feeling for the organism” that characterizes Nobel Prize winner Barbara McClintock’s work (Keller, 1983). According to Keller’s captivating biography, McClintock practiced a very special style of research. She advocated an individualized approach and stated: “You need to have a feeling for every individual plant” (Keller, p. 198). In addition, the feeling for the organism also meant that the organism, the living form, “communicates” with the experimentalists, if only they take the time to “listen.” McClintock therefore advocated slow science, a sharp contrast to the culture of quick results that researchers describe today. Moreover, researchers need to be aware of the limitations of scientific inquiry.

For McClintock, reason, at least in the conventional sense of the word, is not by itself adequate to describe the vast complexity—even mystery—of living forms. Organisms have a life and order of their own that scientists can only partially fathom (Keller, p. 199).

The word is not enough to understand living organisms: This is something on which the laboratory animal-science course teachers and students would agree. However, contrary to the individualization that McClintock favored, laboratory animal science is at the discursive level about minimizing individual
differences (the so-called “constant controlled condition”). So, the feeling for the animal concerns not the individuals but the animal as a model or case.

This is done by way of promoting standardization. The apparatus of standardization of laboratory animals involves every step of the process, from breeding to experimental techniques. Birke et al. (2007), point out,

Not only are the animals made into standard forms through breeding, but so too is their living space, the animal house, as well as the structure of the whole laboratory—all of which is aimed at reducing experimental variability. (p. 36).

I would like to add here that standardization has an even wider scope than commonly assumed: The animals are standardized through, for example, breeding, keeping, and experimental design (Rader, 2004); however, the experimentalists too become standardized. Through FELASA courses and curricula and—most of all—through the communities of learning, students are fostered to “handle with care.” This process of standardization is not complete, Thus, a feeling for the animal does, as the case study shows, imply individual animals too. With the help of Jordan and Lynch (1992) and their discussion of standardization of laboratory techniques, we learn that even in the most highly standardized technique there must be room for individual interpretation and practice to make it work across different laboratories. Standardization in their case—as well as in mine—works side-by-side with processes of dispersion (p. 84). In this case, animal-science literature, text books, and class instructors on the one hand teach a feeling for the animal (in terms of species-specific characteristics), while, on the other hand, they foster a view of the organism and a feeling for individual responses. Response, as Haraway (2008) so wittingly points out, comes along with the same assemblage as responsibility:

Such a capacity can be shared only in and for multi-directional relationships, in which always more than responsive entity is in the process of becoming. That means that human beings are not uniquely obligated to and gifted with responsibility; animals as workers in labs, animals in all their worlds, are response-able in the same sense that people are; that is, responsibility is a relationship crafted in intra-action through which entities, subjects and objects, come into being. (p. 71)

As I have argued throughout the paper, learning to do animal experiments is not just about acquiring a skill by imitating other humans in a community of practice. In this particular setting, the mice and rats used in the course act too, and so they also become parts of the learning community. Thus, it is clear that when trying to conceptualize what goes on in the laboratory, we need to take
into account the responses of mice and rats—however limited their responses may seem—because animal experiments are more than humans acting upon animal bodies. Nonhuman animals interact with humans too. Just like Sanders, Arluke, Haraway and others concerned with working relationships, we can consider rodent-human working relationships in laboratories. Instead of being pure objects for scientific inquiry, working animals constitute parts of significant relationships. This view does not imply that power relations are erased or that nonhuman animals and human workers do not differ in significant ways but that they depend on each other in all its complexity.

Notes

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2. Three of the interviews, with one student and the two teachers, were conducted in Swedish and quotes have consequently been translated for this paper, while three of the students were of foreign descent and were interviewed in English.

3. Two notes of caution: First, the present paper was not written as an evaluation of the course in laboratory animal science. The evaluations performed showed quite positive results, and the students were particularly satisfied with the practical lessons (Carlsson, Hagelin, Höglund, & Hau, 2001). This is confirmed in my interviews; the students had low expectations, but ended up with new insights and appreciated the practical skills they acquired. Second, my aim is not to draw general conclusions based on this small and non-representative sample. Instead, I will take this opportunity to present some thought-provoking findings, which I will later follow up in the larger study of the handling of transgenic mice.

4. The article includes interviews I conducted with both teachers and students. In all cases, the initial “I” designates the interviewee. The initial “T” for Tora—my first name—designates me as the interviewer.

5. I doubt it would work in Swedish, however, where the word “avlivning”, which means “put to death” or “put down”, is the key term (see, for example, Öbrink & Waller, 1996).

References

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