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Ethical boundary-work in the animal research laboratory

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Abstract

The use of animals in scientific experiments continues to attract significant controversy, particularly in the UK. This article draws on in-depth interviews with senior laboratory scientists who use animals in their research. A key claim is that animal research is necessary for medical advance. However, this promissory discourse relies on the construction of three boundaries. The first is between humans and non-human animals. The second is between the positive and less positive impacts of Home Office regulation. The third is between the use of animals in medicine versus other domains such as farming. The article analyses these discourses and evaluates the applicability of ‘ethical boundary-work’ (Wainwright et al., 2006a). I conclude that the concept is a potentially useful device for foregrounding ethics but argue that it carries several dangers for sociologists interested in claim-making in areas of controversy.

Keywords

animals; boundary-work; ethics; laboratory; science

Introduction

Using animals as laboratory models represents a key route through which knowledge about human health and illness is produced. Whilst animal experimentation has been dated as far back as 500 BC (Maehle and Tröhler, 1987), vivisection really took off at the end of the 19th century. Rupke puts this down to the rise of experimental psychology which acted as ‘the horse which drew the cart of the biomedical sciences up close behind the exact sciences of chemistry and physics’. The desire of medicine to appear more like a science and less like an art meant a willingness to embrace the experimental method, which in turn meant embracing vivisection (Rupke, 1987: 6–7). For sociologists interested in health and medicine, animal research is therefore not a side issue: rather, it was, and remains, at the heart of the whole enterprise of biomedical science. Whilst this stream of literature is not reviewed here, animal research is also interesting for its role in debates around knowledge translation (see Martin et al., 2008; Wainwright et al., 2006b).

Supporters of animal research claim that animal use is crucial for scientific understanding and medical progress (Understanding Animal Research, 2011). However, the practice of using animals has always been contested. According to Elston, ‘the controversy has been a vehicle for argument about what animal experiments have come to symbolise: the claims and power of modern science and a form of medicine that espouses and legitimates such science’ (2006: 165).

In the UK, animal research is regulated by the Home Office and their latest statistics show around 3.7 million procedures were carried out in 2010 (Home Office, 2011). This compares to an estimated global use of between 50 and 100 million animals per year (Nuffield Council on Bioethics, 2005). Significant media attention has been devoted to the tactics of intimidation adopted by a small minority of protesters. Over the last decade, these tactics have included threatening letters to scientists, car bombs, and even grave robbery (BBC News, 4 May 2006). The UK situation is watched closely internationally, with media reports expressing concern that the UK is exporting 'extremist' tactics to the US (Townsend, 2004) and to continental Europe (Brumfiel, 2008).

Given this level of public and media controversy, the relative lack of sociological empirical work is surprising. Of the small amount of existing literature, most focuses on social movement opposition to animal research (e.g. Elston, 2006; Jasper and Nelkin, 1992). By comparison, there is less sociological discussion of counter-movements (although see Peggs, 2009), and less material on those engaged in animal research.

Important exceptions to this include Lynch's (1988) classic ethnographic study of a neuroscience lab, which reveals the process by which a sentient naturalistic individual animal gets transformed into an analytic object. More recently, *The Sacrifice* by Birke et al. (2007) brings together previous work by the authors. The book explores the interrelationship between the identities of lab animals, scientists and publics, and reveals how scientists criticize opponents and characterize different sections of the public. The authors draw on data from the USA and the UK and make reference to interviews, observations, and analysis of documents. However, one of the weaknesses of the book is the relative lack of methodological detail which makes comparative work difficult.

This article uses interview data from 18 scientists currently engaged in animal research at UK universities. To be clear from the outset, this article is not about animal ethics *per se*. Instead, it is about the discursive strategies that are used to create authority and legitimacy. The first aim is thus to explore how animal research is justified. The analysis confirms that one of the key routes to legitimacy is to stress human health benefits. However, the article also demonstrates that this standard argument relies on the construction of a series of boundaries. The secondary aim is to critically evaluate the currency of ethical boundary-work (Wainwright et al., 2006a), a concept which claims to help understand the function of discourse, but which has yet to be applied to the animal research field. The article concludes that ethical boundary-work is a useful theoretical tool and is relevant beyond the topic of genetic medicine to which it was originally applied. However, I criticize some aspects of Wainwright et al.'s (2006a) interpretation.

From Boundary-work to Ethical Boundary-work

The concept of boundary-work is credited to Thomas Gieryn (1983) and a paper published in *American Sociological Review*. Gieryn claims that Merton in sociology, Popper in philosophy, and Kuhn in history all share an essentialism that analysts should avoid when thinking about science. However, whilst it may be theoretically unwise to try and demarcate science from other systems of knowledge, the boundaries of science seem to be robust in

practice. This is where boundary-work comes in: Gieryn sidesteps philosophical or epistemic debates to look at how scientists draw rhetorical boundaries between what is science and what is non-science. Boundary-work is thus defined as:

... the attribution of selected characteristics to the institution of science (i.e. to its practitioners, methods, stock of knowledge, values and work organization) for purposes of constructing a social boundary that distinguishes some intellectual activity as non-science.

(Gieryn, 1983: 782)

The aim of this boundary-working is to maintain the power and privilege of science. Using empirical studies, several authors working in the sociology of science have applied or refined the concept (e.g. Waterton, 2005). This article utilizes one particular refinement developed by Wainwright and colleagues in 2006.

Wainwright et al. (2006a: 732) (and see Ehrich et al., 2006) claim to provide a 'socially embedded' account of the ethical implications of stem cell research and to bring together themes of clinical and laboratory ethics. To do this, the authors analyse interviews with 15 biomedical scientists working in two human embryonic stem cell labs in the UK. Their findings suggest that the nature of science has changed. Instead of engaging in boundary-work to excise non-science (e.g. ethics) from science as Gieryn predicted, ethics is 'becoming an integral part of maintaining the image of science' (Wainwright et al., 2006a: 735). One of the problems of the paper is that no clear definition is provided, but my interpretation is as follows: in contrast to boundary-work between science and non-science, ethical boundary-work concerns the distinction between what is ethically legitimate research activity and what is not.

This article demonstrates that the concept of ethical boundary-work can be usefully applied to the animal research field. Furthermore, the findings suggest some interesting similarities between the way in which stem cell scientists and animal researchers present their activities as ethically justified.

Methodology

This article forms part of a broader project which aims to understand the debate over the use of animals in scientific research. What follows is based on an analysis of 18 interviews with senior laboratory scientists located at two UK universities. In designing the empirical work, 'senior' was defined as scientists who hold a Home Office Project Licence and are thus ultimately responsible for the programme of work. On starting the interviews, it became clear that two of the 18 were personal licence holders only and one held a deputy project licence (more detail about the regulatory framework is provided in a later section). Data from their interviews has informed the analysis and their extracts are still included in this article. The scientists varied in age. Some were just a couple of years post PhD, and others had more than 30 years of academic experience. Interviewees are based in a range of departments at each of the two universities. Some individuals have used more than one animal species over their career, and a minority also work (or have worked) with human subjects. Their current licensed projects are for experiments with rodents (mice and rats), or

with non-human primates. Projects ranged from more 'basic', fundamental research to more 'applied research', although several scientists problematized such a distinction. Examples of projects included work on specific diseases such as Multiple Sclerosis and Parkinson's disease, or on factors associated with conditions such as obesity and depression. More specific details about research projects could enable the identification of individuals and departments and are therefore not discussed here. As described below, interviewees were given assurances of anonymity.

Potential interviewees were accessed through a senior member of staff at each institution. One-to-one interviews were then carried out in the scientists' place of work. Each interview lasted for an average of an hour. The interviewer worked from a topic guide, designed to ensure that certain themes were covered, but with sufficient flexibility to allow a conversation to develop.

With consent, all interviews were recorded and transcribed to allow for analysis. My approach to discourse analysis is similar to that used by Burchell, who studied scientists' arguments about agricultural biotechnology and analysed the functions that discourse serves (Burchell, 2007: 51).

Interviewees were advised in advance and again at the start of the interviews that data would be anonymized. Individual names, names of departments and site locations are therefore not used. Given the sensitive climate in the UK, individuals did ask about, and appear to welcome, this policy. In this article, interview extracts are given a code which refers to a particular scientist. For example, A7 refers to interview site A and scientist number 7.

The analysis shows scientists engaged in the construction of several types of boundary. As the following sections demonstrate, this is applicable to the data from both interview sites (A and B) and for scientists using both kinds of animal (rodents or primates). However, where species use seems to impact on the claims made, this is so indicated. As stated, interviewees varied in seniority. A couple of those nearing retirement claimed that they would give fuller accounts than their younger colleagues. However, the analysis shows no significant difference in terms of the issues covered in this article.

Animal Research and the Promise of Human Health

Not surprisingly, scientists interviewed for this study talked about the benefits of using animals as models in research. This was usually achieved by reference to an unmet medical need and significant human suffering. Some of this language was quite emotive, as exemplified in the following quote from a scientist involved in research related to mental health:

If you see what, you know, someone who commits suicide can do to a family. Or if you see what depression and schizophrenia does to people, or the impact of a schizophrenic killing someone who was loved by somebody ... If you see that, then you think well, we can either just let everybody suffer or we can try and do something about it. And so I equate it in that way, that that requires animals.

(A6, mice and rats).

Numerous other examples could be cited of scientists explaining the actual or potential benefits of their research. However, given that this data confirms previous research (Birke et al., 2007: 160–1), further examples will not be included here. However, two points are worthy of mention.

First is the way in which some interviewees in this study expressed apparent concern or resentment about the perceived pressure to stress immediate clinical benefit, rather than longer term advances, for example:

My most important motivation is the idea of fundamental understanding of human mental processes, and the very important, but secondary motivation for me, is the idea of discovering something about disease processes in the human brain. But that order is probably reversed when I come to justifying my research to funding agencies or to the Home Office and the project licence ...

(B3, primates)

The second point is that the use of promissory discourse to justify controversial methods is visible beyond the animal research field. A similar sociology of expectations type argument was also used by Wainwright et al. to help explain the discourses around stem cell biology (Wainwright et al., 2006a). However, I agree with Wainwright et al. that the analysts' task should not stop here. More interesting is the way this kind of promissory discourse itself depends on a series of key rhetorical moves. As is now discussed, scientists using animals drew at least three important boundaries. The first of these relates to the age-old debate about the difference between humans and other animals.

The Human/Animal Boundary

Defining what it is that separates humans from non-human animals has been a key task for moral philosophers. Descartes is often cited in this regard for his notion of beasts as machines, without sentience and without moral standing. Against this view are critics who argue that animals have rights (Regan, 1984), or have morally relevant interests that should be taken into account (Singer, 1975). To discriminate against animals on the basis of their non-human status amounts to 'speciesism' (see Ryder, 2005), in the same vein as racism or sexism. Critics of animal research question the ethical validity of speciesism, whilst, according to Peggs (2009), pro-research groups such as Pro-Test actively maintain and defend a species hierarchy.

Given this eternal debate, how do laboratory scientists themselves separate humans and animals? Surprisingly, perhaps, Birke et al. do not cover this question directly, save for noting that pro-research organizations drew a boundary between animals and humans by 'affirming animals' scientific purpose' (2007: 136). In the present study, laboratory scientists implicitly and explicitly drew a boundary between humans and other animals. One interviewee asserted that the rights of humans come above animals but:

... that's an emotive thing. I can't defend that at any level other than that's a visceral reaction that I have inside myself.

(B1, mice and rats)

Such a 'visceral reaction' could be characterized as referring to a kind of moral intuition. However, most others did articulate why it is that humans are of greater value than other animals. Three of the 18 scientists explicitly used the term 'speciesist' to refer to their own position. This is ironic, given that the term was originally used pejoratively (Orlans et al., 1999). One scientist explained speciesism by reference to empathy. Notice how the interviewee moves easily from 'I value' or 'I'm more interested' to 'we are much more likely'.

But nonetheless, yes, I think I'm straightforwardly a species discriminator. Humans are a particular species and I value, you know, I'm more interested in what happens to them and how I can help them, than I am in what happens to other species and how I can help them ... I think we are much more likely to express empathy for our own species.

(A6, mice and rats)

Another did not use the term speciesism but mentioned their Christian religion as the source for a view that 'we are in charge and we are superior'. However, this is also combined with a long, more secular list of capacities that justify the higher moral status of humans:

I consider myself a Christian among other things, and I have a view on this, I don't know, call it biblical, whatever you want, but we are in charge and we are superior. So this is a view that probably lots of people would want to kill me for, I don't know [laughs]. But anyway, I think it's a different level of say ability, dignity, intelligence, insight, responsibility, pain, capacity to suffer, understanding, language and all these things.

(A7, mice)

As exemplified by the following quote, others cited the richness of human social life as morally significant, and why their research could not be carried out on human subjects.

And then I suppose that I think that a human life I suppose seems to me to have some greater intrinsic worth in itself, because of a human's relationships to other humans, to friends and family, would mean that those types of ... that type of impairment that would be caused to a person as a result of such an experiment, would be unacceptable.

(B5, primates)

The final extract is about rights and why, for the following scientist, animal rights is not a useful idea. Notice again, the stress on what 'we' think. It is not clear precisely what this 'we' refers to, but presumably it refers to humans, human society, or, at least UK norms and values:

So I think, you know, generally we just don't, you know, we don't generally treat animals as though they had intrinsic rights do we? I mean we treat them as though we have a duty of care, but I don't know what it is for a human to have rights without responsibilities. I don't think it really happens.

(A2, rats)

Humans, Animals, and Ethical Boundary-work

The animal research debate is sometimes portrayed as the result of an impasse between competing ethical theories. What is clear from the above extracts is that scientists did not use one particular moral theory to justify experiments on animals. Instead, they used a combination of ethical approaches which includes religious (I'm a Christian), relational (because of the bond between humans), deontological (intrinsic value, rights), capacities (e.g. language), as well as utilitarian. This finding echoes previous sociological work with farmers and others on GM animals, which found that individuals tend to appeal to a combination of moral approaches (Macnaghten, 2004).

Human/animal boundaries are partly created by reference to personal beliefs, for example around religion, but the data also include significant reference to what 'we' as a society think. Following Brown and Michael (2001), this can be understood as an example of 'switching', where scientists employ both a scientific repertoire (I am the expert) and a cultural one (I am part of the public). Brown and Michael claim that this shows scientists as 'sociologically sophisticated' actors. The same kind of subject positioning appears to be used by scientists using animals.

Such positioning can also be analysed in terms of the acceptance or abrogation of responsibility. Kerr et al. show how elite scientists involved in genetics are engaged in a complex process of boundary-working, part of which involves 'deflecting ultimate responsibility to an abstract and amorphous society' (Kerr et al., 1997: 279). By arguing, for example, that 'we' or society does not grant animals rights, the scientists partly circumvent the need for personal justification and pass on the overall responsibility for animal treatment to a generalized, abstract collectivity. Many of the scientists claimed a kind of individual responsibility towards the particular animals in their lab or under their project licence. However, their discourses serve to abrogate responsibility for the overall position of animals in contemporary society.

To summarize, scientists during interview drew a discursive boundary between humans and animals. This in turn enables a form of ethical boundary-work, where research using animals is constructed as an ethically legitimate activity, and comparable research using humans is not. Whilst regulation governing animal and embryo use may be different (Walker, 2006), the discursive moves of scientists in these two domains look remarkably similar. In Wainwright's study, stem cell scientists apparently drew a boundary between embryos and fully fledged humans, where research using the former is made legitimate because scientists' discourses ensure that the embryo 'does not have a biography in the humanist sense' (Wainwright et al., 2006a: 742). Using discursive boundaries, both sets of scientists create an image of their research as ethically legitimate. In short, ethical boundary-work ensures that embryos and animals are not 'humans'. If they were, then this would bring in a whole other set of social norms and legal practices around human research governance. It is to the question of regulation that the article now turns.

Regulation and Ambivalence

Animal research in the UK is regulated via the Animals (Scientific Procedures) Act 1986 (known as ASPA). The Home Office manage a three-way system of licensing which includes personal licences, project licences for the head of a project, and site certificates. Facilities are also visited by Home Office inspectors. Applications are dealt with on a case-by-case basis and scientists must show that they have considered the ‘Three Rs’, that is, that they have considered reducing and replacing animal models, and refining animal procedures (see Hobson-West, 2009). Surprisingly, Birke et al. only devote a few pages to the explicit question of regulation (2007, Chapter 6), and a wider literature search demonstrates a notable lack of sociological analysis of animal research governance, particularly in comparison to the human field. As discussed later, the current study demonstrates some interesting similarities and differences with the case of stem cell research regulation.

The Home Office and supporters of animal research make much of the strictness of UK regulation. It was not surprising that such discourses were also observed in the interview data. As illustrated in the following quotes, this was often achieved by reference to other countries, or to previous practices:

I think it is recognized that the UK is the strictest country in the world at least so far, that’s generally the impression, for regulation on doing animal research. (A7, mice) There is now much less cruelty for animals in laboratories, than there was in the days that I started. And so I mean I would like to think that I was never cruel to animals, but I suspect that there were instances where I did do things which are no longer acceptable.

(A4, mice)

In terms of the process of applying for, and managing, a project licence, some scientists also stressed the indirect advantages. In the following example, the process of writing a project licence is described as laborious but nevertheless can ‘concentrate your mind’:

I think on the whole it works well and it is fairly laborious to set the process up in the beginning to actually write a project licence. But that does ... it does concentrate your mind and make you think about what you’re doing.

(A5, mice and rats)

Others also created a positive image of the relationship with their local Home Office inspector. In the following example, this individual provides an account which is indirectly (and hesitatingly) critical of others who seem to have a problem with the current system.

I mean I think the Home Office inspector we’ve got is excellent. ... I don’t have a problem with applying for a Home Office licence. I think that it should be very carefully monitored what people do ... But some ... because some people find it a very onerous task, I think they do find that it’s sort of over the top. I just think it actually is what has to be done, and I think it’s fair and fine, I don’t think there’s a problem with it.

(A6, mice and rats)

More broadly, several scientists referred to the regulation as a source of protection from critique, either from the ‘general public’ or animal activists. The following example summarizes this concisely (see Hobson-West, 2010, for more discussion of the role of public opinion):

I think generally the licence system is a very good thing and I think it protects us in a way that keeps the general public on our side ... I think it's important to protect us from protesters, because we can say everything we do is being very strictly regulated. And I think the regulation reflects the public opinion and I think that is important.

(B1, mice and rats)

In addition to these positive constructions of regulation, most interviewees used the interview to express varying levels of frustration with aspects of the regulatory system. Interestingly, it was this subject that created most requests to temporarily turn the tape recorder off. The data on this topic are particularly rich but can be broadly characterized under three headings. First is the issue of workload and bureaucratization, and the claim that the current system of oversight is too detailed. Indeed, several interviewees offered to show me the weight and thickness of their printed project licence application. As described by the following extract, there are several stages involved in the process.

And it's incredibly time consuming. I spent about ten days over the last month amending something on the licence which had gone in ... the project licence went in absolutely fine, it was scrutinized by ERP [ethical review process], gone through all the process, and there was something the Home Office inspector didn't like after the fact. And I don't know why that couldn't have been picked up on at the time, but that cost me another week of my life.

(A8, rats)

Second is the related claim that there is a lack of consistency in the system, when guidelines or personnel change.

My previous licence is a good case in point, which literally the inspectors changed the day that my licence was previously granted, and the new inspector didn't like the way it was structured and written. So you know, when it then came to renewing that, it's a completely different way that it's done.

(B2, mice)

A third discourse focuses on the unintended (negative) consequences of the regulation. This argument was more frequently made in relation to primates, for example:

So there are improvements that have been made in the regime of care for these animals which are substantial improvements to their welfare and which everybody is very pleased about. On the other hand there is also a whole list of things that don't really increase the animal's welfare, they just cost a lot of money. I mean the way it works is that if in 1990 we agree that the monkeys should have one cubic meter of space each, then in 1995 that becomes 1.5 cubic meters, and in 2000 it becomes 2.5 cubic meters, and 2005 it becomes 5 cubic metres [laughs].

(B3, primates)

The laughter in this interview was definitely ironic, rather than jovial, and the interviewee went on to recount specific examples of changes in housing that, in their view, have had a counterproductive impact on animal welfare. Their particular Home Office inspector was also criticized for their unwillingness to ‘accept my assurance ... of what monkeys are like you see’. Other interviewees also made similar points about the impact on animal welfare but, in all cases, requested that I not disclose the details of their particular examples. However, what unites them is the way in which the scientists present themselves as the experts on animals, and able to stand above the regulation and see its unintended consequences.

Regulation and Ethical Boundary-work

Some aspects of these interview data are remarkably similar to Wainwright et al.’s discussion of interviews with stem cell scientists. In the animal research case, the Home Office regulation can, for example, ‘protect us from the protestors’. In the stem cell lab, the involvement of the MRC means that ‘if the shit did hit the fan I can say, well, I was following clear guidelines’ (senior scientist, cited in Wainwright et al., 2006a: 742). As predicted by Wainwright and colleagues, animal research regulation is being constructed as a ‘legitimizing framework’ against which personal actions take place. Regulation also becomes a reference point to which scientists can appeal in order to show personal accountability. For example, some individuals presented themselves as particularly diligent at filling out forms. In this scenario, other colleagues are presented as less reliable. Time and place are also used here – so that non-UK countries and historical practice become the ‘disreputable other’ (Michael and Birke, 1994).

Unlike the stem cell case, what is also striking in the present study is the ambivalence expressed by interviewees. Of course, complaints about bureaucracy are not new nor confined to this area. In the human research field, practitioners forcefully argue that bureaucracy is the ‘biggest single threat to UK clinical research’ (Stewart et al., 2008: 1085). Some go further to claim that ‘the bureaucratic burden of research governance is fast becoming counter-productive’ (Gill and Burnard, 2008: 137). This paper provides empirical evidence that such claims are also made in the animal research arena.

However, to probe a little further, this discourse allows scientists to create an image of themselves as upholders of animal welfare, and the regulation (or its delegates) which can sometimes distort it or undermine their own professional expertise. It is therefore not a simple case, as per Wainwright et al., of invoking regulation as a legitimizing framework against which individual actions are presented. Rather, scientists using animals are giving a more complex account of themselves as conformers with, and critics of, the imperatives of animal research regulation.

Animals Inside and Outside the Lab

Whilst animals play a crucial role in the production of medicines and medical knowledge, they are also involved in most areas of contemporary human social life. This is evidenced

through the increasing number and range of sociological studies under the emerging theme of animals and society (see Hobson-West, 2007, for a review). Laboratory animals were most frequently contrasted with animals used for food. Scientists defending the use of xenotransplantation also drew a similar comparison (Brown and Michael, 2001). In the present study, a scientist using mice claimed that: So the number of animals used in the UK pales compared to just chickens, and their welfare conditions versus my mice are like chalk and cheese ... If they [the protesters] want to really campaign on something that matters, that's where the emphasis should be placed, not on our beautifully kept mice that, you know, are humanely put down, incredibly well monitored, have an optimal amount of space, environmental enrichment, constant temperature, you know, optimal nutrition and on-tap veterinary care. I mean I just find that a complete hypocrisy. (B2, mice)

This particular scientist also explained that they are vegetarian and claimed that this personal stance does not conflict with their professional identity. As is clear in the short extract below, the issue of alternatives (or perceived lack thereof) is used to draw a boundary between justified and less justifiable uses of non-human animals:

So I'm a vegetarian who does vivisection, which may seem a contradiction in terms, but I don't see it as a contradiction because you know, I don't need to eat animals, but I do, you know, to research therapies for diseases it's the only system we have. There are no good alternatives.

(B2, mice)

In addition to the use of animals for food, treatment of animals identified as pests was another example:

Thee million animals used in research, in the same time there's 6 to 8 million rodents poisoned to death, you know, with these poisons, which is an agonizing poison. You know, I never use rat poison at home or mouse poison. We've only used traps, because it's an awful way to go ... So I think if they're really concerned about animal welfare, they would go for a better target where they could do more, have more effect.

(B4, mice and rats)

Numerous other examples could be cited, but the above extracts give a sense of the way in which scientists used discourses to express confusion or frustration with a perceived higher public scrutiny of the medical use of animals. The result is a kind of ethical boundary between laboratory practice, and a series of less ethical examples of animal treatment.

The Laboratory and Ethical Boundary-work

There are several possible interpretations of the interview data including these extracts. In the current data set, scientists contrasted their own practice with a series of less ethical others. These 'others' include animal research in the past or in other countries outside the UK. It also includes the protesters, who, according to the interviewees, are to be criticized for focusing on a field of human practice with high standards of welfare. These findings provide contemporary empirical support for previous work by Michael and Birke (1994) and Birke et al. (2007). However, it is also interesting to see how the human use of animals

outside the laboratory became a disreputable other. In addition to the process of disreputable othering, the idea of responsibility can also be used to make sense of the interview data. Scientists may be willing to articulate some level of personal responsibility for animals under their care (indeed, this is part of the licence process), but their discourses also serve to avoid or deflect responsibility for wider animal use to ‘society’ (Kerr et al., 2007). This is particularly interesting if one reflects even briefly on the role of science in those other domains. After all, farming or pest control is not ‘devoid’ of science – far from it. However, a strict separation of animal use inside and outside the laboratory allows interviewees to delineate a ‘positive ethical space’ (Wainwright et al., 2006a: 744). This space is both metaphorical, in the sense of a safe discursive location, and physical, in referring to the hallowed space of the laboratory.

Discussion and Conclusion

Whilst the animal research debate has received significant media and academic attention, there is relatively less empirical research on those actually engaged in experimentation. This article is useful in confirming some of the findings reported in Birke et al. (2007), much of which were based on empirical work that appears to have been carried out as early as the 1980s. Many of the discursive strategies are strikingly similar. This article also confirms that sociological research work with lab scientists using animals is possible in the UK, although careful access negotiation is still required.

The advantage for this study in using qualitative interviews is that they produce *accounts* of attitude or behaviour. However, it would be interesting to use more observational methods to see how actors deal with specific dilemmas in their day-to-day practice. Nevertheless, caution is needed in generalizing from either interview or observational data. Most studies of this type are ‘voluntary’, and so those who agree to participate may theoretically be those with a particular interest in the subject, or a particular image of the way in which sociological research may impact on policy. Furthermore, I must acknowledge the possible influence of my Wellcome Trust funding on this access process. Indeed, one or two of the scientists had received Wellcome funding for biomedical research. Despite the significant disciplinary differences between interviewer and interviewee, their response to me sometimes implied that they agreed to take part to help out a fellow grant holder.

To summarize the main argument, the scientists who took part refer to the benefits of animal research for the development of medical knowledge. Significantly, this claim itself rests on the construction of a series of boundaries. The first is between humans and animals, where the former are constructed as possessing a higher moral worth. The second set of boundaries relates to the regulation, and the way it can both protect and distort the process of science. And finally, scientists using animals create an ethically relevant boundary between uses of animals inside and outside the laboratory.

Overall, ethical boundary-work provides a useful tool to understand the process of animal research justification. The concept *is* therefore generalizable beyond the stem cell field. As predicted by Wainwright and colleagues (2006a), scientists were highly adept at creating an image of their research as ethically sound. In both cases, the use of an entity (animal or

embryo) for purposes of research is discursively justified. Future research could assess the extent to which it applies in other professional contexts. Indeed, the concept has very recently been applied to the infertility clinic (Frith et al., 2011). However, my own study, and a critical reading of Wainwright et al. (2006a) and Frith et al. (2011), suggests that the concept has at least three potential limitations.

First, as this article reveals, aligned sociological concepts are needed to give greater insight into the actual content of rich empirical discourse. In short, my data showed scientists constructing a series of disreputable others (Michael and Birke, 1994), accepting and abrogating responsibility (Kerr et al., 1997) and ‘switching’ between repertoires (Brown and Michael, 2001). Ethical boundary-work is therefore probably best regarded as a kind of structuring device, under which more micro level analytical work is still required. Indeed, the original Wainwright et al. paper implies as much by applying several sociological concepts, but does not make this point explicitly.

Second, I take issue with some of the theoretical interpretations derived by Wainwright and colleagues. In summarizing their findings, the authors claim that ethical boundary-work ‘differentiates between scientists, enhances the authority of ‘non-science’ (e.g. regulatory bodies) and de-privileges science (Wainwright et al., 2006a: 735). Whilst probably unintentional, using language like de-privileging risks implying that science and ethics are fixed domains that are engaged in a zero sum battle for authority – precisely the kind of essentialist view that Gieryn was trying to avoid.

Arguably, Wainwright and colleagues’ choice of words highlights what Gieryn identifies as the ‘analytical danger’ of reifying science (Gieryn, 1995: 420). The ongoing value of boundary-work is in sensitizing us to the way in which the legitimacy of any activity is discursively achieved. Yes, this may sometimes involve apparent deferral of individual decisions or responsibility to an abstract entity such as ‘society’ or ‘regulation’. However, such discourses do not necessarily serve to de-privilege science. On the contrary, reference to regulation is more likely to be just one point on the route towards the overall positioning of scientists and biomedical research as legitimate. This concurs with Kerr et al.’s (1997) argument about the multiple, complex ways in which the authority of professionals is promoted.

This takes us to the final issue which concerns the addition of ‘ethical’ to ‘boundary-work’. On the one hand, the prefix may be useful in attracting new audiences to Gieryn’s work. The new concept also looks particularly attractive for those (including myself) looking for help with how to do empirical work in the broad subject of bioethics (see Molewijk and Frith, 2009). Whilst some philosophers may refer to such activity as descriptive ethics, this phrase is somewhat derogatory to a social scientist and can underplay the analytical work involved.

On the other hand, I worry that by inserting ethics as a prefix we may be in danger of reifying ethics. Surely, the definition of ethics is just as problematic as the definition of science. Indeed, it is more likely that ethics and science are not just inter-related but are ‘co-constructed’ (Jasanoff, 2004). Gieryn himself stresses that “‘science’ is no single thing: its boundaries are drawn and redrawn in flexible, historically changing and sometimes

ambiguous ways' (1983: 781). It is likely that the same is also true for ethics. Adding the prefix ethics may indirectly encourage a more limited type of sociological analysis.

For example, Frith et al. (2011) have recently utilized the concept of ethical boundary-work. Part of their interesting study involved asking infertility clinicians questions such as 'what aspects, if any, of your practice do you find ethically troubling'. They then claim to report the 'thoughts' and 'views' of informants about the role of the ethical in their everyday practice. However, such language fails to follow through on the implications of interviews *as accounts*. The result is that distinctions drawn by the interviewees, for example between 'settled' and 'controversial' issues, are reported by the authors as a conclusion about the nature of morality. In my view, this is to inadvertently reproduce the boundary-work of the interview informants.

The implication of my argument is that scholars interested in claims-making should utilize recent literature but make sure to revisit Gieryn's original concept. His radical constructivist message is that we should avoid the temptation to label a topic (such as animal research, stem cells or infertility) as about 'ethics'. The task instead is to investigate how actors themselves use boundary-work to distinguish between *what is a matter of ethics* and *what is a matter of something else*, such as politics, religion, or science. After all, there is real power in this moment of categorization. As Mitchell neatly puts it, classifications are not pre-existing, rather, 'the only thing that holds them together is society, often times the portion of society with the power to advance its classifications as reality' (2010: 207). Scientists hold significant power in this regard, but so do sociologists. Future empirical work on controversial issues should pay close attention to how particular decisions or whole topics get categorized. This is crucial if we are to continue to expand our understanding of how the legitimacy of institutional and social practice is created and sustained.

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Biography

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