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ABSTRACT In 'Sacrifice and the Transformation of the Animal Body into a Scientific Object' Michael Lynch (1988) explores how the animal body is transformed into a scientific object in the laboratory. How did the laboratory become a (relatively) closed space in which scientists, the experts, were delegated the task of negotiating and transforming the interpretative sense of the animal – from sentient beings to analytic objects – as tools in a scientific machinery? By exploring a parliamentary controversy on experimental medicine at the turn of the 20th century I argue that this depended on a reworking of the status of the animal body, as well as the status of the laboratory. Crucial to this was social theory; specifically, utilitarian reasoning. Thus, what we need to study – this paper argues – is not simply the ways in which the practices of annual experimentation were met with opposition and critiques, but also how these practices came to be culturally and politically accepted, and what this implied for science - society relations. In analysing this controversy, the author attends to recent turn to politics in STS and argue for the significance of studying conventional political sites such as 'Parliament' and the role that social theory plays in renegotiating and remaking sites and objects.

Keywords experimental medicine, history, human–animal relations, politics, research material, science–society relations, utilitarianism

Subjected to Parliament:

The Laboratory of Experimental Medicine and the Animal Body

Kristin Asdal

In his paper 'Sacrifice and the Transformation of the Animal Body into a Scientific Object', Michael Lynch (1988) explores how the animal body is transformed into a scientific object in the laboratory. He notes that the term 'sacrifice' usually implies the act of 'making sacred', but in laboratory science the word is part of the technical vernacular. Nevertheless, he also observes that even if the mundane laboratory animal is not transformed into a 'sacred' object per se, the interpretive *sense* of that body is radically transformed. This takes place in a series of preparatory practices that turn the 'naturalistic' animal into an analytic object and the bearer of a generalized knowledge.

The current paper elaborates on questions related to those raised by Lynch; indeed, it is very much inspired by this piece of work and related questions. In contrast to Lynch's work, however, I will not explore contemporary, routine practices within science (that is, the laboratory), but

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rather a historical case and a tense controversy at a political site: within the Norwegian parliament. How did the laboratory become a relatively closed space in which scientists, the experts, were delegated the task of negotiating and transforming the interpretative sense of the animal – from sentient beings to analytic objects – as tools in a scientific machinery? This, I argue, depended on a reworking of the status of the animal body, as well as the status of the laboratory. Crucial to this was social theory or philosophical reasoning put forward from within Parliament. Hence, this paper is concerned with the turn to politics in STS and the role social theory plays in renegotiating and remaking sites and objects.

The Role of Animal Experiments in Medicine: Background

It is widely recognized that the new and extended laboratory practices that developed in the final years of the 19th century did so in the face of opposition and controversy. England is often cited as the country where such controversy was most acute, but it also occurred in many other countries.¹ Norway was one such country, although the debate came later than in England. The way the controversy unfolded in Norway may have closer parallels with that which took place in the USA (Lederer, 1985; Bittel, 2005), where there was little research for the anti-vivisectionists to battle against before the beginning of the 20th century (Turner, 1980).

How should we characterize the second half of the 19th century through the turn of the 20th century when it comes to the question of research material and the use of animals in research? One way to describe it is to say that nothing particularly novel happened. W.F. Bynum (1990) and others point out that the use (and, indeed, the 'sacrifice') of animals had long been vital to medical research. Holmes (1993) tells how the German researcher Herman Helmholtz described frogs as 'the old martyrs of science' in his first experiments on muscle action in 1845.

Nevertheless, during the latter half of the 19th century there was a marked shift in how animals were put to work in medical research: animals became crucial tools in all the life sciences (Bynum, 1990; Cunningham & Williams, 1992). Gradmann (2004) shows how the emerging field of bacteriology departed from clinical medicine and replaced clinical observation with laboratory experiments 'by working with mice instead of men'.² Bynum (1990) and Kohler (1993) describe how the numbers of animals involved in research and the range of species increased considerably between the 1890s and the 1910s. Another marked transformation was that by the time of the First World War, laboratory animals had become standardized commercial products. Before 1890, they had not been bred for experimental purposes.³

Thus, to present 'a grand narrative': the latter half of the 19th century can be compared with Foucault's characterization of the first half. Whereas the early 19th century depended crucially upon the post mortem to gain knowledge about the living (Foucault, 2003 [1963]), in the late 19th century

the post mortem was (partially) displaced by examination of the living body.⁴ In practice, however, methods and approaches were far more heterogeneous and overlapping. And, of course, some countries did not develop strong traditions of experimental medicine and animal experimentation until later.

The question of research materials has, in recent years, emerged as an important theme in the history of science and STS (see for example, Pasveer, 1992; Lederman & Burian, 1993; Gaudillière, 1997; Logan, 2001, 2002; Gradmann, 2003, 2004; Rader, 2004). In *The Pasteurization of France*, Latour (1988) touched upon the significance of microbes, but the tools of science and the living bodies of laboratory animals were not part of his story. In a smaller contribution, Latour (1992) subsequently addressed the controversy over experimental medicine and concluded that there was surprisingly little opposition to laboratory medicine between 1850 and 1900. He comments that this is strange, since the laboratory was a special and closed space, which was claimed to be relevant to the practice of people outside the laboratory. In addition, small pieces of bodies inside the laboratories were claimed to represent the whole patient beyond the laboratory.

Like Latour, Clarke (1987) has pointed to the fact that there was nothing inherently natural about these new practices: the life scientists who adopted the new experimental approaches had to explain and justify their practices to a range of different audiences in order to secure support for their research and research materials. This suggests that what we need to study is not simply opposition to and critiques of animal experimentation, but also how it was scientifically, culturally and politically accepted. There is a need for a radical historicizing of both scientific practices and the related political and cultural practices, and conceptions that took part in enabling and transforming science.⁵

The Law as a Site of Struggle over Experimental Medicine

During the 19th century a range of countries introduced laws that regulated and forbade the mistreatment of animals (Dirke, 2000). Hence this was an issue, a matter of regulation, which was not new to law. Within the existing penal code of Norway the mistreatment of animals was already subject to regulation. However, a thoroughly revised version presented to Parliament in 1899 comprised, in principle, all animals, whereas before only domestic animals had been included.

It was within this textual context of mistreatment that the issue of animal experimentation emerged. The new draft law introduced the issue in the form of a sub-theme to the more general issue of animal mistreatment. The proposed paragraph reads as follows:

... whoever ... should be guilty of gross or malignant mistreatment of animals, or whoever aids or abets such an act, will be punished by fine or imprisonment up to 6 months. This decision does not hinder the King, or someone to whom the King has bestowed authority, from allowing

appointed persons in designated places to conduct painful experiments on animals for scientific purposes. (Neg. 1901/1902: 636)

The draft paragraph was open to interpretation. On the one hand it was read as a way of regulating, limiting and potentially prohibiting animal experiments. On the other, it was read as a way of exempting scientific experiments from any form of legal regulation. Was the proposal simply a way of carving out space for such activities to proceed unregulated? Or did it imply that permission would be difficult, or perhaps even impossible, to obtain?

The medical research community (for instance the Faculty of Medicine at the University and the veterinary authorities) feared the latter. They attended Parliament on several occasions to express their opposition and reservations. They worried aloud that any prohibition against using animals in scientific experiments would put an end to Norwegian experimental medicine, so that Norwegian researchers would be obliged to leave the country. Animal bodies were crucial, they argued, to progress in medicine, as animal experiments had made it possible for medicine to achieve great results in the battle against illness and suffering, and no other way of obtaining similar results was feasible.

In addressing the Parliament, the argument and words of the famous French scientist and proponent of animal experimentation, Claude Bernard (1872: 7) from almost 30 years earlier ('en physiologie, l'anatomie pure et simple du cadaver est aussi insuffisante quelle l'est en médecine. C'est l'anatomie du corps *vivant* qu'il nous faut; nous avons donc eu recours aux vivisections [the simple anatomy of the cadaver is as inadequate in physiology as it is in medicine. It is the anatomy of the living body that is called for, and that is why we have had recourse to vivisection]') were repeated in almost identical terms: What was interesting was not the dead bodies, but live bodies, living animal bodies. 'It should be obvious', they claimed, 'that experiments with the objective of exploring processes of life and processes of disease may only be done by means of the *living* organism and on *living* organs' (Doc. 35 1901/1902: 3).

Reference was made to the significance of animal experiments for the progress of medicine in Europe: this had been the case with regard to Koch and Pasteur, Lister and Behring; and it was the case regarding tuberculosis, anthrax, surgery. As a result of the methods and achievements of scientists like Koch and Behring, human lives were saved – daily, it was argued. The Medical Faculty of the University added that, to the best of its knowledge, there existed no abuse of animals in scientific experiments. Thus the issue raised by way of the penal code had no relevance to current medical practice.

By arguing in this way, animal bodies were rendered crucial to experimental medicine. It takes work to establish links or relations between various sites (Mol, 1988), and it was precisely such work that the medical community was performing: experimental medicine was linked to society through its achievements, through the useful results these practices had produced already, as well as what these would continue to produce, for the

benefit of society, in the future. Through experimental medicine, the problems of society outside the laboratory could be solved. Thus the argument was not about the value of pursuing science for its own sake, for an open exploration of nature, for the achievement of truth. The argument rested on ‘the way out’: the beneficial link between the laboratory and the relief of pain and suffering outside it.

The reactions from the medical community were no less vehement when a competing version to the proposed paragraph was suggested, this time by ten members of Parliament. This version stated a more radical and explicitly restrictive regulation of laboratory practice: ‘In cases where there are important interests to society, the [king] may permit specified persons in specified places to inflict pain on animals by way of experiment’ (Doc. 35 1901/02:8). Thus, in this version, the medical laboratory could not be granted a general or overall exemption from the regulations of the penal code. Only in cases of important interest to society was this to occur. On top of this, ‘society’ had to be given access to the laboratory: first, ‘those who pursue these forms of experiments are obliged to document the nature and quantity of the employed animals as well as the nature and purpose of the experiment’; and, second, the local animal protection movement should be allowed to appoint one or two adult men to witness any experiment.

Ordinary Citizens versus Expert Competence

A straightforward way of understanding what was at stake in the parliamentary debate is to perceive it as a critique, even mistrust, of expertise. The formulations of the stricter alternative paragraph explicitly challenged the autonomy of science and expertise, as well as the right of the experts to regulate their own activities. As it was formulated in the ensuing parliamentary debate: ‘What they [the medical experts] should have acknowledged was that it was not them, but we here [the members of the Storting]’ who should decide whether particular experiments should be allowed. A cautious, sober-minded collective outside the expert circles should deploy their sense of justice in place of ‘the especially interested’, that is, the experts (Neg. 1901/1902: 744).

The argument was that if a group of citizens were given dispensation then this should be accompanied by strict controls: ‘... we do not want a caste in society which will have the special privilege of being exempt from the penal code, and which may freely do what is subject to punishment in the case of others, and moreover, without any form of control’ (Neg. 1901/1902: 746). Thus the controversy was one of esoteric knowledge versus common sense embodied in ordinary political actors.

In the Parliament, this proposed restriction was not only expressed as a general critique, but was also concretely and directly linked with recent and disappointing medical experiments. The debate can be understood in the context of a more widespread disillusionment that followed the initial enthusiasm with Koch’s tuberculin cure of 1890 (Gradmann, 2004). Reference was made, for instance, to personal experiences with the tuberculin remedy:

'I do of course acknowledge the good things these persons have achieved, but they are no more than human. This is what a friend of mine learned when he allowed himself to be inoculated with Koch's tuberculin' (Neg. 1901/1902: 787). According to this story, his friend died as a result of the inoculation. The conclusion was obvious: as scientists were simply human themselves, they had to accept that they should be treated as ordinary political subjects.⁶ Supervision and control were crucial.

The Laboratory and its Social Relations: The Creation of Laboratory Space

There was, however, more to this controversy than a critique of expertise and individual experts. The creation of space was also at stake. On the one hand, simply by being treated under the heading of animal mistreatment in society at large, laboratory space ('specified places') was, in principle, made equal to the rest of society. Laboratory space was made into a 'sub-place' of society in general. Thus, laboratory space was nothing exclusive, or exceptional. But this status was ambiguous, as the next part of the paragraph configured the laboratory as precisely that: an exceptional space, and one that would possibly be exempted from norms and regulations in society at large.

To conceive of the laboratory as simply a sub-place of society at large was even more of a crucial starting point for the stricter alternative. It was precisely because these 'specified places' were destined for activities that would be punishable in other parts of society that society had to be given access to those places and that the practices had to serve a purpose for that very society.

In the debate, it was claimed that the demand for outside observers came from the animal protection movement. This may have been the case, but the demand certainly also drew on other sources. The expert commission – the Penal Code Commission (1896) – which had prepared the new draft law on behalf of the government in the first place, had not been unanimous. On the question of animal experimentation one of the lawyers on the commission dissented, stating that he 'could not conform to the idea of exposing animals to possibly both painful and long lasting suffering' (Udkast til Almindelig borgerlig Straffelov for Kongeriget Norge. II. Motiver [Draft for Penal Code for the Kingdom of Norway. II. Motives], 1896: 287). If this was to happen nevertheless, then it had to be only in exceptional circumstances, in instances of considerable interest to society, and strictly controlled.

The dissent may be read as a double move: in order to grant the laboratory exemption from the general rule of not mistreating animals, society had to be given access to the laboratory. At the same time, the dissent implied a demand from the side of the laboratory: painful experiments on animals were only to be pursued in cases of considerable interest to society. Thus society carved a way in, and the laboratory had to have a watchful eye on the ways out, that is, on the interests of society. This implies that painful experiments should be socially purposeful.⁷

Competing Versions of Science–Society Relations

The controversy then, was not so much about a critique or mistrust of science, as it was about competing versions of science and its social relations. Indeed, I would like to argue that the more radical alternative, when it comes to regulating science and demanding access to the laboratory, actually reveals an immense faith in science and the practical results that may follow from experimental medicine. It does not so much express scepticism about science as it does about an abstract version of science that only scientists are capable of policing. Because, as it was put in the parliamentary debate: the aim was not to hinder ‘competent and good attempts to enable relief for a suffering humanity’. Rather, it was to ‘prevent the possibility of excess in order to satisfy a quest for knowledge and curiosity that is not directly directed towards helping suffering humanity in relation to illnesses and diseases’ (Neg. 1901/1902: 766).⁸

In this way of configuring the laboratory, the practices pursued within the laboratory are perceived as a form of activity through which useful effects or social relevance can be achieved concretely and directly. The demand, as well as the conviction, is that experimental medicine must prove beneficial to society. Then, and only then, is science worthy of support and perhaps even exempt from norms and regulations that apply to similar practices in other parts of society.

The interesting thing then is that the discourse of practical interest, of a socially relevant experimental medicine, became intimately linked with the issue of research material. It was precisely because the practices within laboratories had come to be seen as morally dubious and problematic that the demand for social relevance – useful results for society at large – became so strong. Thus the inside and the outside of the laboratory mutually constructed each other.

Lynch (1988) points to how the analytical and the naturalistic animal are both integral to the way animals are handled and indexed in laboratories. In the parliamentary debate, however, the notion of a naturalistic versus an analytic animal was linked up with opposing and distinctive notions of usefulness or utility. Together these defined the science–society relationship in conflicting ways.

For those opposing the proposal that was laid before Parliament in the first place, practical interest meant direct relevance to society – the perception being that there existed a form of direct relationship between each experiment and the ensuing result. At the same time, their critique, including the one put forward by the dissenting member of the Penal Code Commission, seems to have been linked to the notion of a ‘naturalistic’ animal – that is, to the sense of an individual animal body that can be witnessed directly in the laboratory – while the experiment to which it is subject is linked to concrete and direct relevance for society.⁹

As Lynch defines it, a ‘naturalistic animal’ is the animal in ordinary perception and interaction. It is ‘the animal appreciated by laymen ... the animal championed by animal rights advocates and to which human-like “feelings”,

perceptions, sensitivities ... are attributed' (Lynch, 1988: 267). Unsurprisingly, then, the appropriate authorities for judging experiments would be the animal protection movement or people appointed by them. They would be best able to judge whether the animal was being mistreated or subjected to pain. In this demand there is an interesting parallel with the claim for control and regulation, for access, to the factory. This was a space or room that had been subject to law and regulation in Norway earlier in the 19th century. But whereas the bodies subject to control and protection by the controlling authorities of factories were human bodies, the factory workers, the bodies to be subjected to control and protection within the laboratory were animal bodies. In this sense, the animal bodies were also, if not to be considered equal, then at least to be comparable with ordinary citizens.¹⁰

From Practical Relevance to the Principle of Utility

The above line of reasoning, however, was countered by utilitarian reasoning which defined the animal body and the notion of social relevance, of practical interest, in a distinctly different way. During the tense and extraordinarily long parliamentary debate, this was the reasoning which came to be the most influential in 'overruling' the opposition and critique of the government's proposal. Here, the overall narrative or storyline was put forward by the conservative and former, as well as future, prime minister Francis Hagerup (1853–1921). Hagerup was also a professor of law and chair of the Committee of Justice in Parliament.

There was not a shadow of doubt about Hagerup's position: in his opinion it was simply impossible for lay people to reasonably evaluate laboratory affairs: 'It should be obvious that this form of control will be either ineffective or harmful.' First, the significance of experiments to scientific research was not something lay people could understand. They might even intervene and stop an experiment. '[A] physiologist, a pharmacologist, a surgeon, a pathologist would have to live with the sword of Damocles hanging over their heads. Any day a scandal might break out ... the whole press might be mobilized to label him as a man guilty of punishable mistreatment of animals.' 'No, Mr. President', professor Hagerup argued, 'these are not the conditions appropriate to science' (Neg. 1901/1902: 752).

The point of departure for this conclusion, however, was that animals had to serve human interests.¹¹ Thus, importantly, a notion of hierarchy was inserted as a mediating premise: animals were simply allotted a destiny or fate different from that of human beings. The crucial thing, then, was to assess the morality of actions taken with respect to animals in relation to their purpose, for instance 'against the vast human interests for which the newer physiology and medicine were fighting' (Neg. 1901/1902: 747). Accordingly, the premise of purposefulness was also implied, though this conception of purposefulness differed from the way it was imagined within the competing paragraph outlined above.

To Hagerup there was no direct relationship between experiment and result. Purpose, then, was more loosely defined and related not to each

individual experiment, but to experimental medicine *in general*. In addition, different interests had to be balanced against each other – and here the premise of hierarchy was crucial.

Historians have debated whether the lawyer, politician and professor Francis Hagerup was part of the utilitarian tradition (Seip, 1968; Sejersted, 2001 [1984]), and, if so, what kind of utilitarian he was (see, for example, Slagstad, 1986). The point here is not to ‘prove’ or pinpoint one particular strand of utilitarianism, but to show its relevance to the way in which the question of experimental medicine was reordered.

Utilitarianism was well known to the Norwegian academic public. Mill’s essay ‘Utilitarianism’ had been translated in 1872 by Brandes (Mill, 1872). Though his own academic writing related predominantly to German traditions, Hagerup was well acquainted with English utilitarianism (Hagerup, 1901, 1904, 1919). Indeed, his arguments about animal experimentation may be closely related to those of Mill: all action is for an end, and the rules of action must take their whole character and colour from the end to which they are subservient (Mill, 1991 [1861]). Mill’s argument implies that pleasure and freedom from pain are the only desirable ends, and that all desirable things are desirable either for the pleasure inherent in them, or as a means for promoting pleasure and preventing pain (Mill 1991 [1861]). Hagerup’s argument was similar: a process in which live animal bodies are subjected to pain is acceptable if it is a means for *reducing* pain in the (human population) in the future.

Commentaries on Mill have underlined his optimism (Albee, 1902: 252) or noted that he is committed to, ‘a dogmatic version of the theory of progress’ (Gray, 1991: 587). Mill writes: ‘Yet no one whose opinion deserves a moment’s consideration can doubt that most of the great positive evils of the world are in themselves removable, and will, if human affairs continue to improve, be in the end reduced within narrow limits.’ Even disease, he writes, ‘that most intractable of enemies’, might be indefinitely reduced ‘by good physical and moral education, and proper control of noxious influences; while the progress of science holds out a promise for the future of still more direct conquests over this detestable foe’ (Mill, 1991 [1861]: 146).

Thus, Mill is not simply committed to progress. Medicine is the indisputable means of realizing this end. Indeed, Mill’s views might well have been developed in close relation to the medical texts and debates of his own day.¹² Hagerup followed this line of reasoning: he upheld the principle of progress as a mediating premise, and understood medicine as a crucial component in achieving that progress.

In sum, the combination of future progress and the idea of balancing interests within a hierarchy¹³ redefined the situation. There was no longer any reason to demand direct results, inextricably linked to each experiment and witnessed directly by people from beyond the circle of experts. Instead, attention focused on how progress could be achieved – in the future. Moreover, medical practice was no longer morally problematic; on the contrary, it was deemed to be good, in itself. As Mill had already put it: ‘The

medical art is proved to be good, by its conducting to health' (Mill, 1991 [1861]: 134). Hence, pain inflicted on animals was a necessary means for achieving morally superior ends.

Everyone would accept, Hagerup argued, that the interests in question were important, indeed crucial. So the question was: Was it not just as legitimate for a physician to use animals in the interests of society, as it was for a soldier to sacrifice a horse when what was at stake was saving a whole battalion from ambush? Was it not just as morally acceptable to use animals within laboratory research as it was for a physician to 'sacrifice a horse' when what was at stake was saving human life, just as it was morally acceptable for a peasant to allow his animals to starve during the winter, when this was the only way to save his life and that of his family (Neg. 1901/1902: 750)? Hence, humanity was central, just as it had been for Mill (Gray, 1991).

In the above situations, it was argued, it was not a matter of recognizing legal rights, but focusing instead on moral rights. Animals might serve human interests. Using animals for scientific purposes was therefore not to be seen as an *exemption* from the penal code. Moreover, since it was an appropriate action, it should not have been included in the penal code in the first place. Thus, the Chairman of the Committee of Justice was inclined to remove this issue from the penal code altogether: Inflicting pain on animals in the service of morally superior interests was not to be seen as being equivalent to the *mistreatment* of animals.

Thus again, the reshuffling of the issue involved a double move; now however, the inverse of the one above: the laboratory was indeed an ordinary place, a site whose activities could be considered equal and comparable to practices towards animals in society at large. But the 'ordinariness' of the laboratory was simply the ordinariness involved in sacrificing animals to serve human ends.

But subsequently, the laboratory was then configured to be exclusive and special: sacrificing animals within the laboratory involved experiments that a lay person would not understand. Was it not the case that 'Darwinism itself is built upon investigations of the most inferior organisms, about which a lay person would simply say: what is the importance of this?' (Neg. 1901/1902: 747–48) Was not the same true for modern physiology and surgery, as they played a crucial part in the battle against terrible diseases?

It was medicine *in general* that was subservient to a suffering humanity, not each experiment. Experimental medicine concerned an abstract and analytical form of activity, which lay people were not in a position to be able to judge. Moreover, the example of 'inferior organisms' implied that perhaps there would not be anything worthy of monitoring in the first place.

We are obliged to use animals for human purposes, the argument went. However, animals should not be subjected to pain when no such purpose existed. In addition, animals should not be subjected to any more pain than that required for the achievement of the purpose. If such pain or damage was needed to achieve a superior purpose, however, it was not necessarily an action that should be punished. On the contrary, it counted as a morally

justifiable action. Or, as Mill (1861: 200) had already put it: ‘[T]o save a life, it may not only be allowable, but a duty, to steal, or take by force ...’.

At the end of the day, despite heavy criticism and profound contestation, and an extensive and extraordinarily tense debate within, as well as beyond, Parliament, the utilitarian position triumphed. Animal experimentation was sanctioned by law, thus politically accepted. Lay people were not given access to the laboratory.

The utilitarian argument did not deny that animals were sentient beings. What the utilitarian argument did, however, was to ensure that this was not all: animals were also in a crucial sense means, *tools* to achieve morally superior ends. To evaluate this double identity, means and ends had to be weighed against one another. When should an animal be sacrificed for superior ends? This was a question deemed too difficult for a lay person to handle, and so it was left to those with special competence: the medical experts. This again depended upon a reconfiguring of the laboratory – an ordinary space when it came to the use of animals to pursue superior ends, but an *exclusive* site when it came to its very machinery, the methods applied for pursuing these ends. No longer a site for criminal acts or punishable activities, the laboratory was conceived of as a space for pursuing progress, for beneficial results in society – in the future. The only ones capable of securing this road to progress were the scientists themselves.

The Recurrent Theme of Science–Society Relations

Previous studies in the history of science have already applied Lynch’s (1988) conception of the transformation of laboratory animals in a historical context. ‘The live animals had to be transformed into, and be perceived as, simply a neutral object of scientific investigation and not as a perceptive pain-feeling fellow-creature being put to the torture’, point out Cunningham and Williams (1992: 8). Logan (2002: 332) makes a related argument, again with reference to Lynch’s paper, and describes the ways in which animals were transformed from ‘organisms’ to ‘things’ – ‘uniformed “materials” that ensured generality’. Thus one might say that the historical transformation process was one from ‘organism’ to ‘tool’.¹⁴ So, how and where did this transformation process unfold in practice? To understand this, this paper has made the Parliament, not the laboratory, the relevant unit for study and consequently, elected members of Parliament, rather than the scientists, the most relevant actors.

It is a commonplace in science studies to treat science in relation to the social and cultural context in which it emerges and is practised (see, for example, Fujimura, 1996; Rabinow, 1998; Jasanoff, 2004, 2005). A further commonplace is to show that the boundaries between science and society are not given, but are historically achieved and variable (Shapin & Schaffer, 1985). In addition, many authors have also shown that the laboratory is a cultural institution (Hacking, 1992) in its own right, linked to the social in a range of different ways. Many authors have ‘followed scientists through society’ (Latour, 1987) and traced how society – as well as their publics – are

materially transformed by science. And it has also been argued that science is nothing without 'society'. Thus if actors beyond the laboratory are not 'enrolled' and 'interested', then scientific facts have no effect. Indeed, they do not even count as facts in the first place.

Important work of this kind has already taken place in the field of animal experimentation. In a study of how target publics are persuaded, Michael and Birke (1994a) show that medical scientists maintain a dialogue with their opponents and critics in order to restrict the latter to certain forms of debate. They are turned into a *controlled* core set.¹⁵

Although it is unsurprising that scientists and laboratories are typically treated as the core actors in processes of fact-making, critics, including feminists, have often noted that resistance by those who rarely get a voice in technoscience processes may be overlooked when the focus of study is exclusively on scientists and the laboratory (Star, 1991; Haraway, 1997). In addition, the status of the 'users' of knowledge is often underrepresented in this kind of work (Martin, 1994).¹⁶

More recently STS work on knowledge-making has started to look 'outwards', towards empirical studies of politics. In this work, the tools for studying laboratories that were originally developed in STS, or more specifically actor-network theory, are used for the purpose of studying political issues and controversies in their own right (Latour, 1999, 2007; Latour and Weibel, 2005; Barry, 2001; Barry & Slater, 2002; Asdal, 2008a,b; Marres, 2005, 2007).¹⁷ Some of this work has also been linked to Foucauldian approaches to governmentality in order to explore political issues and practices (Foucault, 1991, 2004).

What I have been particularly concerned with in this paper is the way in which social theory takes part in producing issues and the very objects at stake in the first place. The idea that social theory helps to create its object is not new to STS, especially not in the context of economics (Callon, 1998; Barry & Slater, 2002; Law, 2002a).¹⁸ Within this strand of STS, economics is seen not as a 'theory' outside the phenomena of study; rather, economic theory is understood as a form of technology that takes part in creating economic phenomena.

In the case I have explored in this paper, a parliamentary controversy over law, the focus is on the *interplay* between science and social theory. The argument is that the laboratory sites and the tools of science do not simply come from the laboratory – or if they do, then the laboratory and its tools of knowledge are themselves shaped by *social* theory.

Conclusion: Redefining Practices, Delegating Issues

By drawing parallels between Hagerup's lines of reasoning and utilitarianism in the tradition of John Stuart Mill, the aim has been to demonstrate what this line of reasoning *did*, hence its capacity as a tool or 'political technology'.¹⁹ The intention behind applying these notions of 'tool' and 'technology' is not to imply that 'utilitarianism' was a neutral means to an end. On the contrary, and what I want to draw attention to is the ways in which

words and social theory take part in reordering sites and objects, hence the very issues at stake.

As STS scholars prepare to leave the laboratory, it may be worth remembering one of the reasons for turning to this site in the first place: The laboratory was deemed to be *the* place for producing solid facts, thus in effect a highly consequential place. In turning to politics, it may likewise be worth considering which sites are the consequential ones, and how. Rather than seeing politics everywhere, the value of Foucault's concept of 'gouvernementalité' is to attend to the (historical) specificities of particular forms of rule (Barry, 2001). As I have sought to demonstrate, an ordinary political institution, the parliament, became crucial to laboratory medicine at the turn of the 20th century. The way in which this was made to have effect and consequence was through a rewriting of the law, the penal code.²⁰ However, sometimes ordinary political institutions, such as the parliament, delegate issues, thus transforming them from being a question of public involvement and general political competence to being an issue of exclusive expert competence. Understanding these processes of delegation and transformation is another reason for exploring sites such as ministries and parliament.

Certainly, the medical community took part in these debates. However, in understanding how and why animal experiments were accepted as an integrated part of medical science, it does not suffice, I would suggest, to say that the public was enrolled in their controlled core set. Perhaps we could say that, in this respect, what went on in Parliament went beyond their special competence; what was needed was more than a little help from political philosophy (which, again, was informed by science, as was the public concern with pain).

In the Norwegian Parliament, an 'old' – or at least established – social theory took part in integrating, by way of reshaping, the 'new' tools of experimental medicine within existing society. Ironically then, a specific version of the allegedly ordinary practice of 'sacrificing' animals for morally superior ends became a matter of exclusive expert competence. The reason why lay persons were excluded was that in principle the laboratory was an ordinary place, a sub-space of society at large, but in practice the laboratory was different: the scientific machine itself, the process of mediating between means and ends, was reasoned to be an abstract, analytic activity – and one that a lay person would not understand.

Notes

The research that led to this paper is part of a larger project financed by the Research Council of Norway on 'Nature and Science in Politics and Everyday practices'. An earlier version of the paper was presented at the 'Framing Nature' workshop in Rosendal, Norway, in the spring of 2006. I would like to thank Nick Bingham, Einar Lie, Steve Hinchliffe, Ellen Krefting, Anne Kveim Lie, Lynn Nygaard, Annemarie Mol, Tiago Moreira and Ingunn Moser, but not the least John Law and the editor of this journal, Michael Lynch, for their critical reading, comments and support.

1. The classic study is French (1975). Two other influential studies are Ritvo (1987) and Turner (1980). See also Rupke (1994) for an edited collection on vivisection in a range of countries, including a paper on the English case by Stewart Richards.
2. Gradmann points out, however, that this did not mean replacing mice with men completely; in a second step, both men and mice became tools of research, something that in fact resulted in a great expansion of human experimentation – and the latter is the topic of his paper.
3. With reference to the period in between 1885 and 1900, Cheryl A. Logan (2002) writes that it was ‘just prior to the selective breeding of the first standardized species’. For this later period see Rader (2004) and also Gaudillière (1997). For a more general history and overview see Guerrini (2003).
4. For instance, Foucault (2003 [1963]): 204): ‘Nineteenth century medicine was haunted by that absolute eye that cadaverizes life and rediscovers in the corpse the frail, broken nervure of life’, and his reference to X. Bichat (1801):

for twenty years, from morning to night, you have taken notes at patients’ bedsides on affections of the heart, the lungs, and the gastric viscera, and all is confusion for you in the symptoms which, refusing to yield up their meaning, offer you a succession of incoherent phenomena. Open up a few corpses: you will dissipate at once the darkness that observation alone could not dissipate.

5. On this point see as well the interesting work of Viviana E. Zelizer (1992). In her study of the emergence of life insurance in the 19th century she draws on a range of the same theoretical resources as Lynch (1988) to understand the transformation process involved in putting economic value on life. Zelizer’s account is a story of the practices and oppositions involved in making space for new forms of market transactions. Referring to Durkheim and Simmel, she notes that one of the most significant alterations in the moral values of modern society has been the sacralization of the human being. In her paper she sets out to use data concerning the diffusion of life insurance in the 19th-century America as a testing ground to explore the larger theoretical problem of establishing monetary equivalences for sacred things. In doing this she puts forward the hypotheses that cultural resistance to including certain items – namely those related to human life, death and emotions – into a market type of exchange introduces structural sources of strain and ambivalence. Through her account of a range of historical events, Zelizer attends to the important point that these processes of transformation are not to be taken for granted. On the contrary, they are events to be explained through historical and sociological analyses. More specifically she points to the importance of analysing these clashes and confrontations of norms and values when it comes to the sacred – not least matters related to emotions and the human being as a holy entity. These are all relevant points, first for understanding the criticism and resistance to using animal bodies as test objects, and thereafter for understanding the reasoning and practices through which this came to be a more accepted part of medicine and culture.
6. As in this example, members of Parliament referred in their discussion to a range of specific examples picked from, for instance, physiology or bacteriological research. In Parliament, experimental medicine stands out as a kind of umbrella for a rather confusing and highly mixed set of practices and disciplines. Here, I do not want to draw apart the different disciplines or practices in order to explore what this controversy was ‘really’ about. I take instead this ‘confusion’ or heterogeneity as a matter of fact and explore the ways in which science was perceived and reworked on this basis.
7. This discussion of purposefulness parallels in many ways the English case. See French (1975).
8. This is in line with related research on attitudes to science, and most noteworthy, *theory*, within the Norwegian parliament at about the same period. See Jacobsen (1964).
9. ‘The individual’ was a central topic in the political discourse of the 19th century, and the notion of a bounded individual was part and parcel of the economic and political liberalism at the turn of the 20th century (Otis, 1999, 2002). Attending to the

individual rights of animals can be understood in relation to this. This does not imply that the 'naturalistic' individual animal is a stable, non-historical category. Moreover, the notion of the naturalistic individual animal seems to have been accompanied by an already established form of critique, or notion of offence, grounded in the affects or sensations that the mistreatment of animals had upon the humans in society. This issue, however, will be explored elsewhere in further detail.

10. A range of authors have demonstrated, in various ways, that women were important actors and gender a crucial issue in the controversies over vivisection (for example, French, 1975; Elston, 1987; Lederer, 1994; Bittel, 2005). There is ample evidence that this was relevant also to the Norwegian case. What is particularly interesting is that here the gender issue became intimately linked with the issue of citizenship and the question of what it takes to be a 'proper' citizen. Thus it can be studied in close relation to the quest for democracy and a demand for disciplining unruly bodies. However, this question deserves to be fleshed out in greater detail, and thus demands an analysis and discussion that is beyond the scope of this paper.
11. This, of course, is not a position that was new to this period. See Turner (1980) for a related discussion.
12. This is simply an assumption based in a reading of Mill's own text and general knowledge of the period. See for example Otis (2002) for the relations between science and literature in the 19th century. Otis demonstrates the shared context for these fields of knowledge and their mutual exchange. As for the Norwegian case, Hagerup was familiar with medicine. He had started his university career studying medicine and only later changed to law (Haffner, 1900).
13. Compare with, for example, Mill's (1991 [1861]: 140) famous dictum, 'It is better to be a human being satisfied than a pig satisfied.'
14. See Clarke and Fujimura (1992) and the special issue of *Journal of the History of Biology* edited by Lederman and Burian (1993) as a partial response to this work. See also Logan (2001).
15. See also Michael & Birke (1994b).
16. One might argue, however, that this particular difference is more a matter of difference in empirical focus than of difference in principle. 'Users' are crucial to and part and parcel of actor-network theory as well. But authors differ considerably when it comes to the ways in which studies of science are performed *in practice*.
17. One could object though, that again, *in practice*, Latour (1999) is not an empirical study of politics. And of course, there is a whole range of studies within STS both currently and historically that deal or have dealt with science and its relations to politics. Here, I focus more specifically and, indeed narrowly, on some of the contributions inspired by later actor-network theory and that are engaged in what Marres (2007) describes as an ontological turn. This ontological turn, however, is a more widespread feature in recent STS contributions. See, for instance, Law (2002b, 2004), Moser (2008) and Mol (2002).
18. But see also Lynch (1991) for another, more phenomenologically inspired, way into the production of space and objects.
19. See, for example, Austin (1975). This tradition of speech-act theory can be related to the ontological turn or ontological politics touched upon above (see note 17).
20. I agree with De Vries (2007) in his argument that we should not limit ourselves to going after traditional political institutions, but in contrast with De Vries I would suggest we miss a lot if we try to circumvent them in our search for politics and the political.

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Erratum

Subjected to Parliament: The Laboratory of Experimental Medicine and the Animal Body

Kristin Asdal

In the December 2008 issue of *Social Studies of Science*, the abstract to Kristin Asdal's article was incorrectly published and should read

“...Thus, what we need to study – this paper argues – is not simply the ways in which the practices of **animal** experimentation were met with opposition and critiques, but also how these practices came to be culturally and politically accepted, and what this implied for science – society relations.”

The Publisher regrets this error and would like to offer a sincere apology to Kristin Asdal.

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