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Culturing care in animal research

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Introduction

Since 2015 the concept of a ‘culture of care’ has become increasingly prominent within animal research. It is promoted by regulators of animal research in the UK¹ and widely recognised as being instrumental to improving the welfare of both staff and animals in animal research facilities, and to the quality of the science produced.² At the same time it is a complex and multifaceted phenomenon, and uncertainties remain as to ‘[h]ow can a *culture of care* be defined, what does it look like in institutions where it is functioning well, and what factors enable or constrain its development?’³ Furthermore, animal research regulation and guidance emphasises the importance of caring for the animal and identifies strategies to support this (e.g., training, distributing responsibilities to those with competence), but often overlooks the care of facility staff – a growing concern for many who work in this sector.⁴ Alongside internal tensions and uncertainties around what constitutes a good culture of care within animal facilities are further tensions between those who accept animal research as necessary for the advancement of medical and scientific research, and those outside these organisations for whom the very idea of cultures of care in animal research is an anathema (see Giraud, Chapter 8).

Many of those writing on a ‘culture of care’, ourselves included, have sought to emphasise the complex and multi-faceted nature of care in animal research: it can include care for the animals used in the research (often seen as synonymous with animal welfare), but also the need to care for those working with them (care for

staff and colleagues), a commitment to the broader scientific and institutional objectives and standards they pursue (care for the science), and, occasionally, care for those who may benefit from the research in the future.⁵ Concurrently, animal research professionals and advocacy organisations are developing initiatives aimed at better defining the culture of care and advising research settings and establishments on how best to promote a culture of care. For some, the institutional ethical review board, or as it is known in the UK, the Animal Welfare and Ethics Board (AWERB) can play a key role.⁶ For others, guidelines and benchmarks offer insight into the multiple dimensions constituting a culture of care, from institutional level initiatives to interpersonal relations,⁷ while training programmes offer an opportunity to promote the need for a culture of care amongst those with a licence to practice animal research.⁸

This chapter provides an overview of the different ways in which care finds meaning within the practises of regulation, institutional management, and daily animal caretaking within animal research. It seeks to understand what care looks like in practice from the perspective of those working in animal research facilities. How do different individuals interpret their responsibilities to support and develop a culture of care under the Animals (Scientific Procedures) Act 1986 (ASPA), which regulates UK animal research (see also Chapters 1 and 10)? How is this reflected in the ways these individuals talk about their work, the way they feel about that work, and the things they do to try to provide good care? How is the capacity of those occupying different roles within an animal facility to deliver good care both enabled and restricted by broader institutional infrastructures and governance practices, as well as by the social relations between members of staff, and between staff and the animals they work with?

The chapter begins by outlining our methodology, and then turns to locate the increasing interest in the ‘culture of care’ in animal research in the UK and internationally, before examining the roles played by physical infrastructure, governance, and human–human and human–animal relations in facilitating and/or restricting a culture of care. Finally, by way of conclusion, it suggests that in addition to the harm–benefit analysis that informs the formal licensing of animal research procedures, there is also a form

of harm–care analysis within animal research facilities, through which those working there negotiate tensions and pressures in their day-to-day work.

Methodology

Our evidence comes primarily from a series of in-depth interviews with seven junior animal technologists⁹ (those who provide day-to-day care for laboratory animals), conducted between 2013 and 2015.¹⁰ We focused on this group as we wanted to understand how, at the beginning of their careers, our participants learned to care for, and cared about, the animals they worked with. More specifically we were able to chart how these individuals adapted to their institutions' culture of care, as their narratives shifted from elucidating a broadly felt 'love of animals' towards recounting specific actions (derived from their growing knowledge of the species they work with and institutional animal welfare protocols) as illustrative of providing particular forms of care. We became attuned to the stories they told of us of relationships they built up with the animals in their care, and reflected on what these in turn might tell us about how care takes place in animal research facilities. These interviews were then analysed using the NVivo12 coding software to extract key themes and patterns in the data through allocating specific codes, of which the most frequently used (highest number of occurrences) concerned care, emotions, animal suffering, and communication. Throughout this chapter we use quotations from these interviews and extracts from our fieldwork diaries to illustrate how these key themes emerged within our data, arguing these in turn evidence different aspects and understandings of a culture of care. We also spent time as participant observers in animal research facilities and at professional meetings and events, and we interviewed twelve other key stakeholders in the animal research community to better understand the wider context within which our junior animal technologists were working. All interviews were conducted with the informed consent of participants, and all the names referred to in the text are pseudonyms to protect the identity of interviewees.¹¹

We supplement the above with interview and participant observation material from the wider Animal Research Nexus Programme (2017–23), and with material from our readings of regulations, guidelines, and academic and professional publications (identified through our ongoing engagement with stakeholders) that discuss the culture of care, in particular where these speak to changes in the understanding of the culture of care over time. Before examining our findings in more detail, we will next set the scene by exploring the ways in which the culture of care is being defined in professional guidance within the animal research community, and the extent to which this is echoed by emerging social science research on how care is conceived of and practised in animal research.

Culturing care in animal research

Today, within the animal research community, the culture of care is increasingly recognised as a complex and multi-faceted concept. Reviewing recent guidelines as part of an exercise to develop a new culture of care training resource, we identified a range of different qualities that stakeholders suggest are key to developing and sustaining a good culture of care (see Table 6.1). These take into account the need to develop a shared institutional vision of a culture of care, strong leadership that effectively communicates, supports, and promotes it, as well as the need for all staff to respect different roles and understand how their actions shape others' working lives, and therefore to be able to take and share responsibility for facility-wide animal and staff welfare.

These lists and accounting exercises provide a good sense of what a culture of care might involve, and go some way towards suggesting how this might be achieved in practice.¹² As social scientists, however, our key concern in this chapter is to reflect on how these measures shape and respond to how care takes place in the animal facility, enabling, but also sometimes constraining, different forms and expressions of care, with implications for animal and staff wellbeing. We are interested in how normative understandings of care, welfare, and wellbeing emerge: who is expected to do emotional care-work, who is expected to cope, and who is expected to be

Table 6.1 What makes a good culture of care?

<p>Strong leadership: Senior management are committed to developing and promoting a culture of care, responsible animal use, the 3Rs, and animal welfare. An expectation of high standards with respect to the legal, welfare, 3Rs, and ethical aspects of the use of animals, operated, endorsed, and resourced at all levels throughout the establishment. Senior management and leadership champion their institution's culture of care values and recognise and support caring practices.</p>
<p>A shared institutional culture of care: A common set of values and standards, which is communicated, understood, and implemented across all parts of the establishment, and that is reflected in the condition of the animals, working environment, and all relevant documentation.</p>
<p>Commitment to animal care and welfare and the 3Rs: A commitment to and proactive implementation of good experimental design, good care, and the 3Rs. Dedication to a learning culture and the regular review and improvement of policies and processes to strive towards higher standards of animal welfare.</p>
<p>Commitment to staff care and welfare: A commitment to fostering a culture of inclusivity and mutual support where staff demonstrate empathy and understanding towards each other and appropriate mechanisms are in place to support staff well-being. Demonstrable respect for differing ethical perspectives on animal use.</p>
<p>Recognition of both shared and individual responsibility: An effective operational structure with clear roles, responsibilities, and tasks in which animal technologists and care staff, named persons (NVS, NACWO, NIO, NTCO),* trainers, and assessors are listened to and their work supported throughout the establishment. Roles and responsibilities with respect to developing a culture of care are clearly defined and visible. There is a recognition of shared responsibility (without loss of individual responsibility) towards animal care, welfare, and use.</p>
<p>Training, competence, and continuing professional development: A robust framework for training on aspects of animal care and use, plus assessment of competence, together with recognition of the importance of continuing professional development for all staff, and with adequate opportunities and resources provided. Engagement with the latest developments in animal welfare science and experimental design. The importance of compliance is understood and effected.</p>
<p>Recognising and rewarding good practice: Programmes recognise achievements in the 3Rs and care excellence.</p>

Table 6.1 (continued)

Empowered staff: Creation of an environment where staff at all levels throughout the organisation are respected, listened to, and feel empowered to come forward with any concerns or suggestions they have to improve animal care.
Empowerment of animal welfare oversight committees: Effective and well-supported ethical review of scientific work undertaken with a thoughtful and rational approach.
Good communication: Mechanisms to support open communication and collaboration between different research programmes, teams, and staff at all levels.
Commitment to openness and honesty about animal use both internally and in the public domain.
Commitment to take a culture of care into account when working with those outside the organisation. Mechanisms to ensure that standards at animal suppliers, contracted organisations, couriers, and research partners nationally and internationally are consistent with the good practice that is implemented in-house.

* NVS (Named Veterinary Surgeon); NACWO (Named Animal Care and Welfare Officer); NIO (Named Information Officer); NTCO (Named Training and Competency Officer)

Sources: This table is adapted from Sally Robinson et al., ‘The European Federation of the Pharmaceutical Industry and Associations’ Research and Animal Welfare Group: Assessing and Benchmarking “Culture of Care” in the Context of Using Animals for Scientific Purpose’, *Laboratory Animals*, 54.5 (2019), 421–432, DOI: 10.1177/0023677219887998; European Commission, *A Working Document on Animal Welfare Bodies and National Committees to Fulfil the Requirements under the Directive* (Brussels: European Commission, 2014); LASA and RSPCA, *Guiding Principles on Good Practice for Animal Welfare and Ethical Review Bodies*, 3rd edn, 2015; Penny Hawkins and Thomas Bertelsen, ‘3Rs-Related and Objective Indicators to Help Assess the Culture of Care’, *Animals*, 9.11 (2019), 969, DOI: /10.3390/ani9110969; M Brown et al., ‘Culture of Care: Organizational Responsibilities’, in *Management of Animal Care and Use Programs in Research, Education, and Testing*, ed. by Robert H. Weichbrod, Gail A. (Heidbrink) Thompson, and John N. Norton, 2nd edn (Boca Raton: Taylor & Francis, 2018).

able to handle the suffering of both themselves and the humans and animals they work with? We can see in the developments within nursing and medical education a growing sense that staff care, and conversations around care, coping, and suffering are starting to be handled differently, reflecting an awareness of the hidden culture

that lies behind medical education practices.¹³ To what extent is there also a hidden culture within animal research?

In opening up the question of how care is conceptualised as a practice in animal research, we build on a wider body of scholarship within science and technology studies and cognate disciplines where care has been a central theme. This trend is exemplified by the work of scholars such as Maria Puig de la Bellacasa, Annemarie Mol and colleagues,¹⁴ which draws attention to care as iterative, relational practice; something which involves constant reflection and tinkering in response to the changing environments and relations within which the subjects of care are embedded. Building on the legacy of writing on care from Hochschild, Gilligan, and Tronto,¹⁵ scholars from the social sciences and humanities working on laboratory animal research, as well as colleagues writing from within animal research, offer further nuance and specificity to this understanding of care as complex and multi-dimensional. Their work highlights how cultures of care in animal research are: mandated through regulation;¹⁶ practised through skilled labour;¹⁷ entangled through human–animal relations;¹⁸ felt as emotional labour and cognitive dissonance¹⁹; embedded in infrastructure²⁰; shaped by national cultures and contexts;²¹ shared as stories;²² balanced as complex obligations to patients, publics, and research subjects²³; or enacted as a counter to unavoidable harm, violence, and suffering.²⁴ This chapter brings this literature into conversation with the emerging practice of caring in animal research experienced amongst the junior animal technologists we worked with. Furthermore, by focusing on the period between 2013 and 2015, before the culture of care became a widely established buzzword within UK animal research (and increasingly internationally), we can explore how the labour culture of animal care significantly precedes the label. The next section begins this exploration by examining how particular forms of care-work are – at times literally – built into the infrastructure of animal research facilities.²⁵

Care as technological infrastructure

Firstly, we might suggest the entire structure of animal research facilities is designed to provide a particular kind of care (husbandry) for the animals, alongside a care for scientific progress through peer-reviewed experimentation. These are the elements of a culture of care as set out in institutional visions and in culture of care strategies which state that ‘all establishments should ensure that they have a clear vision of what a culture of care means for them’,²⁶ but which are also embedded in the technological, bureaucratic, and physical architectures of animal research facilities. Care becomes closely specified as a series of benchmarks that those tasked with providing animal care are mandated to provide. For example, in the 2014 *UK Animals in Science Regulation Unit* guidelines²⁷ the word care most frequently appears in conjunction with issues of animal welfare and animal accommodation (section 7, ‘Code of Practice on the care and accommodation of protected animals’), which in turn focuses on requirements to meet animals’ needs for freedom of movement, food and water, to check animals daily, and to minimise harms and suffering.

For some scholars, notably those working in critical animal studies, this conjuncture of caring for animals and caring about experimental set-ups leads to an instrumentalisation of care,²⁸ synonymous with the ‘cold’ forms of care described by Hochschild,²⁹ a reading arguably not helped by the now fairly well-established mantra within animal research that the poorly cared for animals leads to poor quality scientific data. However, such a reading sits awkwardly with animal technologists’ professional expertise in offering skilled care³⁰ to the animals in their charge, for whom good husbandry practice – through, for example, the provision of environmental enrichment, as well as conscientious adherence to welfare protocols³¹ – goes hand in hand with their emotional warmth towards the animals they care for, through to individual-specific consideration for mixing animal personalities in group-housed settings. For example, junior animal technologist Carrie (interview, 2015) speaks of how she is motivated by the fact that she cares for animals which require care for whatever reason: ‘that was

one of the questions they asked me, “Would I have a problem in this sort of environment?” [...] And I don’t think I do because [...] I do it because I care for the animals’. At other times, though, conflicts can arise where offering care for one subject, human or animal, can lead to direct harm being imposed on another. This applies, for example, to the tendency to separate and singly-house aggressive male mice (who may harm both each other, and in so doing also impede the progress of a particular research protocol), despite the suffering those mice may experience from lack of social contact with their kin.

Furthermore, alternative forms of caring for the animals can lead to uneasy resolutions where there appears a hierarchy around what matters most. For example, innovations in husbandry practice can seek to improve both staff and animal welfare, but they do not always sit easily alongside a junior technician’s desire to interact with and handle the animals they care for. Here is Claire talking about the introduction of the new Individually Ventilated Cages (IVCs):

I do prefer conventional [cages] just because in an IVC they’re in boxes, like a show box basically with an air ventilation. And you look at the mouse in that box and it’s just doing what it would do–, anyways it’s just going round and eating and playing with his friends or it’s chewing on something or it’s going in and out of its hide. Whereas like, mice that are kept in the conventional box because you can pull out the racks and look in behind [...] They do this thing where they put their noses up and they can smell you and they know the technician that looks after them every day. So, you kind of have a sense of more–, they know who you are so you’re more part of their little world, which is quite nice really. [...] But then I guess if they get a cleaner life in an IVC, so they’re less susceptible to bugs, then an IVC is better for them. So, I think it’s swings and roundabouts really. (Claire, junior animal technologist, interview, 2013)

Claire’s description captures very effectively how IVCs both enable and hinder care. They provide a healthier, germ-free life for the mice, which could improve their health status and welfare, and they reduce human welfare risks from exposure to animal allergens. At the same time, they hinder animal technologists’ direct interactions with animals, which can be seen as detrimental to

the care skills known to develop through close bonding with animals. Furthermore, direct interaction with animals is also a coping strategy for animal technologists, who seek out those intimate animal interactions – such as going to cuddle the rabbits – to counteract more challenging aspects of their work. In other words, physical infrastructure both enables the provision of some forms of care whilst simultaneously limiting others – a prioritisation where some kinds of (often more easily measured and evidenced) care are chosen over others. While this example of care-in-practice focuses on the importance of being in proximity to the animals concerned, the next section considers in more depth how care also takes place at a distance through regulation, governance, and the allocation of responsibility. This dimension also feeds into the processes of prioritisation, by focusing on some aspects of care more than others.

Care as governance

A second way in which cultures of care are enacted is through governance and regulation. As a controversial sector, regulation and associated oversight provide a key means through which animal research institutions are held accountable to wider society for the care they provide. For example, the EU directive 2010/63/EU (recital 31) states that an institution's animal welfare body should 'foster a climate of care', and further guidance³² serves to assign responsibility for delivering this to: (i) regulatory officials and inspectors; (ii) those 'named' as having a specific role, such as Named Animal Care and Welfare Officers in the UK; and (iii) Named Veterinary Surgeons, as well as recommending that the culture of care is embedded in Education and Training Frameworks. An additional working document (National Competent Authorities for the implementation of Directive 2010/63/EU, 2014b) further emphasises the role to be played by National Committees promoting the importance and relevance of a good culture of care for good scientific and animal welfare outcomes, as well as Animal Welfare and Ethical Review Boards (AWERBs) which are seen as central to fostering a culture of care. All of these bring attention to the ways in which responsibility for providing particular kinds of care is assigned to key individuals

and processes within research animal facilities. For example, overall responsibility for regulatory compliance rests with the Establishment Licence Holder and senior management, who experience care failings primarily as moments when systems flag a failure of the institution to comply with the conditions of their animal research licence. Project Licence Holders are accountable for work conducted under their individual licences, and this responsibility in turn may be delegated to named persons such as Named Animal Care and Welfare Officers, Named Training and Competency Officers, and to specific staff who are responsible for carrying out regulated procedures (such as surgeries or administering substances or behavioural tests) or daily care-tasks (such as checking water supplies or cleaning cages). The way in which these individuals understand and respond to these legal responsibilities in turn shapes the ways in which they may approach the culture of care.

Indeed, regulation is also open to interpretation and is shaped by national constitutions, global competition, and local cultures.³³ For example, EU regulation is reflected in UK Home Office guidance, but interestingly this guidance emphasises firstly the importance of regulatory compliance:³⁴ ‘non-compliances’ serve as a key performance indicator for a facility, and addressing these is central to retaining the establishment licence. For facility manager David (interview, 2012), who had experience in both the private and public sectors, compliance was a key indicator of a good culture of care, but also, importantly, a good culture of care is key to helping ensure compliance: ‘How you implement a culture of care [...] shows through in compliance, service level’. By this method, good care would be signified by a low number of non-compliances, or moments where something goes wrong and the conditions of the licence are infringed (for example a failure to provide water). However, David continues to set out how care is not solely about compliance, and also that it extends beyond care for the animals, to encompass care for facilities, personnel, and customers: ‘Because the culture of care isn’t just about the animal in your hand, it’s about caring for your facilities, caring for your people first and foremost, then caring for the animals, caring for your customers, developing a customer service ethos’. There is a strong tone of working within a customer-service economy in what

he says, which begs the question about how customers (those who may source animals or animal testing services from a private sector facility) further down the supply chain may also shape emerging cultures of care. But there is also an interconnecting vision of the multiple aspects which collectively might be drawn on to nurture a culture of care.

This emphasis on how a culture of care encompasses human–human relations as well as human–animal ones is echoed in the guidance provided by professional bodies and other non-governmental organisations. For example, in the UK, the Laboratory Animal Science Association (LASA) and the Royal Society for the Prevention of Cruelty to Animals (RSPCA) have produced a guidance document on the *Guiding Principles on Good Practice for Animal Welfare and Ethical Review Bodies* (3rd edn, 2015). In contrast to the UK Home Office documentation, this guide places good communication at the heart of governing a culture of care and includes a key role for AWERBs in promoting a culture of care through two-way communication with senior management. This is echoed in recent research which suggests AWERBs could go further in recognising the care needs of staff as well as animals.³⁵ This emphasis on communication is also noted by Natalie Nuyts and Carrie Friese, whose research showed how the ways in which scientists and animal technologists communicate ‘shapes if and how a culture of care takes shape within the organizations and institution of science’.³⁶

Broadly, across much of the documentation on the topic is a sense that a culture of care needs to strive to go beyond complying with regulation. Robinson and fellow members of the European Federation of Pharmaceutical Industries and Associations’ Research and Animal Welfare Group explicitly assert that:

A Culture of Care goes beyond adhering to legal requirements. It refers to an organizational culture that supports and values caring and respectful behaviour towards animals and co-workers. A Culture of Care is the responsibility of everyone involved with animal studies, from those directly working on the studies and beyond to include animal facility management, sample analysts, study planners, engineers, biologists, chemists, statisticians, project leaders, managers and senior leaders. The culture should instil responsibility

and accountability in those planning and implementing research programmes and those caring for animals, so they do the right thing ethically and strive for continuous improvement.³⁷

Similarly, Hawkins and Jennings define a culture of care as exceeding minimum requirements, but place greater emphasis on values and attitudes than we have seen elsewhere, adding texture and nuance to the work that communication and interconnectedness can achieve:

The culture of an organisation relates to the beliefs, values and attitudes of its staff and the development of processes that determine how they behave and work together. A Culture of Care is one that demonstrates caring and respectful attitudes and behaviour towards animals and encourages acceptance of responsibility and accountability in all aspects of animal care and use. This should go beyond simply having animal facilities and resources that meet the minimum requirements of the legislation.³⁸

Such accounts recognise that while regulation and guidelines can provide a resource for developing a culture of care, and indeed constitute a form of care in and of themselves,³⁹ on their own they are insufficient.

The guidelines cited above offer a vision of a broad distribution of responsibility and accountability across all aspects of animal care and use, which extends beyond, and to some extent may even be hindered by, an over-emphasis on compliance and offering a good service. What is less visible in these guidelines, but became very apparent in the course of our research, is how putting such a vision into practice in and of itself requires a culture of not only taking care but accepting and sharing responsibility. For one of the junior animal technologists we spoke to, this became very visible when seeking a resolution to an animal problem that would be satisfactory for all those involved:

I guess it's just the way-, the way things are dealt with. So, like, if there's ever an issue with someone or an issue between like-, with someone and someone else and the animals are in the middle it's always-, it will always be resolved and it's - the resolution is - always the right resolution for the animals. So, I guess that's how I know. (Claire, junior animal technologist, interview, 2015)

While Claire emphasised the wellbeing of the animal as being the primary concern, the capacity of a team to take responsibility, communicate, and find negotiated compromises to deal with issues between people that affected the animals was described as evidence of the presence of a culture of care. This emphasis on ‘taking responsibility’ in turn brings us to a third dimension we want to explore, as we consider how human–animal and human–human relations also play a key role in shaping cultures of care.

Care as relationships

Some of the earliest ethnographic work looking at animal research was quick to recognise that many of those who work in animal research, and animal technologists in particular, often form close emotional attachments with some of the animals in their care,⁴⁰ experiencing emotional harm and distress when those animals are used or killed as part of the research process.⁴¹ This ability to care about as well as for the animals they work with, to attune to their needs, is often seen as a key ethical resource, and a quality which distinguishes ‘good’ from ‘bad’ animal technologists.⁴² These ideas came to the fore strongly when we spoke to senior managers about the recruitment process for animal technologists. The managers we spoke to stressed the importance of getting the right kind of person,⁴³ someone who showed empathy towards animals and evidence of a strong work ethic and high standards.

The qualities sought out by managers and valued by others who work in animal research show how care is also a property of individuals, albeit one which can be cultivated. The managers we spoke to often asked new recruits about their experiences working with animals, while junior animal technologists narrated their journey towards working in the sector as part of a much longer history of wanting to work with animals, beginning on farms or in pet stores. As we have argued elsewhere, such experiences are key to developing not only practical skills in animal care and handling, but emotional experience in dealing with the more challenging side of living and working with animals, including when they become ill or die.⁴⁴ Yet at the same time it can leave animal

technologists – as care providers – vulnerable to psychological and emotional harm.⁴⁵ As one manager put it, when you're recruiting new staff you need to remind them not to 'forget why the dogs are here' (interview with facility manager David, 2012). Here a 'culture of care' describes not only the care new animal technologists show towards the animals, but also the care offered to them to support them through the more challenging aspects of their work.

We have a very, very detailed induction and probation period which we adopt for our animal technicians, and that includes being sympathetic and empathetic at all stages. You know, the first time an animal technician kills, like a new recruit. You know, they will watch it, we've got a video we show, they get lectures, they get all sorts of things, very much like a researcher. But the impact [of the first time they kill] is something that we are sensitive to. (David, facility manager, interview, 2012)

Furthermore, it is arguably these more intangible dimensions of care-work which are placed at greatest risk at times of increased pressure within a facility's working environment. Sources of such pressure may vary between sites, from funding and publication pressures in academic establishments, to the pressures for a fast turnaround or requests for the use of particular procedures from clients in commercial settings. The licensing process and paperwork needed to comply with animal research regulation provides a form of care for the animals by aiming to minimise animal suffering and harm, and care for the researchers in terms of legal protection and approval of their work. However, for some, especially junior researchers, these are also stressful and time-consuming processes, especially when they lack adequate support.⁴⁶ Animal technologists also faced pressures from staff shortages. The impacts of the COVID-19 pandemic placed considerable burdens on those working in animal research, with staff at all levels having to work longer hours, to live away from home or to kill larger numbers of animals as work was delayed or suspended. These pressures can result in staff at all levels, from technicians to named people and researchers, having to make difficult decisions and perform complex, careful, and vital work whilst being increasingly physically and emotionally exhausted.

This came across in our third interview with Debbie and Fiona, who had by that time both been working in their facility for nearly two years and had taken on more responsibility:

I think it all like comes around like staffing, staffing is majorly important, because all that stress that is being put on you then affects you and then you're making mistakes, do you know, we're all human, we all make mistakes, do you know, and then you feel bad for it and then you're like, oh if I wasn't as stressed as I was, or if I wasn't thinking about doing this, and concentrating on what I was doing I wouldn't have made that mistake. (Debbie and Fiona, junior animal technologists, interview, 2015)

While without exception all those we spoke to saw the welfare of the animals as the primary concern, Debbie and Fiona's experiences speak eloquently to the complex intersection between human and animal care. As Williams explored in greater depth in her recent examination of cultures of care in animal research, how 'human carers work with and interpret the needs of animals depends to a significant extent on how human-human interactions address human, as well as animal, needs, wants, feelings, resources, and responsibilities'.⁴⁷

An additional source of pressure comes from interactions with stakeholders and publics outside of the animal research facility. It is interesting to note that in the UK, where we undertook our research, the main regulator, the Animals in Science Regulation Unit,⁴⁸ emphasises the role of public opinion or 'societal expectations' in informing a culture of care: 'A good culture of care is an environment which is informed by societal expectations of respectful and humane attitudes towards animals used in research.' Here wider publics are seen as a key driving force for the culture of care in animal research, and yet beyond animal activism there is little visibility as to what laboratory animal welfare means in a lab context, in contrast to media and retailer attention to food animal welfare, which has shaped market segmentation on welfare standards. Nevertheless many of those we spoke to, working at all levels, spoke of the importance of external critique and scrutiny in driving reductions and refinements in animal use and the development of alternatives to animal testing: 'I think animal rights protestors are

a good thing [...] I think it's very important they have a voice and they continue to have a voice in society because it does keep us aware of what we're doing' (group interview with animal technologists, 2013).

The dialectic between the 'culture of care' in animal research and anti-vivisectionist critique is therefore arguably a productive one. As Eva Giraud writes in her careful and nuanced account of activist practice, 'different approaches need to remain in fraught dialogue with one another in order to recognise that the contradictions inherent in each approach mark imperfect responses to an equally messy and contradictory ethico-political terrain'.⁴⁹ At the same time, this is something which needs to be handled with care. The history of direct-action animal rights protests in the UK, particularly during the 1990s, has left a legacy of concern which makes many of those working in the sector cautious about talking about what they do outside of the workplace. Being open to alternative perspectives brings with it its own emotional burdens.

Well, when the Animal Rights [activists] were at their peak, you know, and some of their opinions based on what was going on I can understand where they were coming from, nothing is perfect in any sphere. But [following] the threats and the intimidation, we ended with very much a bunker mentality, you know, and people became very introverted. There was a lot of, I don't know, it was just a very negative place to be. (David, facility manager, interview, 2012)

Here care might be seen in the training provided by animal research facilities in how to handle protests, as well as more pragmatic measures to protect staff identity and provide a secure working environment. In the longer term though, such measures cannot perhaps alleviate the emotional toll of facing those criticisms, nor of being unable to discuss what you do outside of work or with a limited few trusted friends and relatives. We might ask what a more careful approach to such an encounter might look like, one which builds on these productive tensions and contradictions, while remaining respectful of fundamentally different perspectives and mindful of the emotional toll such encounters can have for all involved.

Conclusion

Each of the three different dimensions of ‘cultures of care’ set out above is characterised by a central tension between the need and desire to deliver good care and the often unavoidable harms that the practice of animal research imposes on animals and the humans who work with them. This juxtaposition of care and harm is also highlighted in recent work in conservation⁵⁰ and animal sacrifice.⁵¹ We suggest this tension between care and harm is a productive area for future work at the interface of science and technology studies and work in anthropology and animal studies. Recent research in these fields has been productive in examining the consequences of animal research in terms of its impact on both human–animal relations and scientific praxis;⁵² our work adds to this by drawing attention to the harms experienced by humans as well as the animals in these relations.

As we have shown, the physical infrastructures of animal research facilities are often a negotiated compromise between meeting the care needs of animals and the humans who work with them. For example, we noted how new IVC technologies reduced some forms of harm, offering improved animal welfare, improved biosecurity, and reduced risk of humans developing animal allergy, but also limited some kinds of care, such as the affective bonds technicians developed with animals through regular handling. Similarly, while regulations, guidelines, and training provide a top-down means of mandating towards good care, they cannot force people to care about the animals and people they work with. We saw how the ability of regulations and guidelines to enforce good care was tied up in the ways in which that regulation and guidance was interpreted by those tasked with implementing it, always shaped by cultural norms, and the capacity they had to take responsibility for not only delivering but striving to exceed those requirements. We then saw how this ability to take responsibility for and to deliver good care for both animals and colleagues was also conditioned through individual relationships and encounters, and noted how both internal and external factors, including project deadlines, financial and resource constraints, the impact of the pandemic,

and the critiques offered by anti-vivisectionist movements can compromise and limit capacities to care and be cared for. In practice, caring about animals and people you work with is also constituted through diffuse affective emotional elements, but these, too, come with their own risks and vulnerabilities, for example, when the demands of maintaining standards of care during periods of staff shortage place physical and emotional burdens on animal care staff.

We therefore argue that cultures of care in animal research facilities are characterised not only by reasoned harm–benefit analysis⁵³ – the formal assessment process which informs the decision about whether or not to grant a licence for animal work – but by a constant ongoing renegotiation with scientific designs and institutional pressures. These scientific practices and pressures can impose harm, and this necessitates the provision of good care for both the animals and humans within these spaces (and possibly beyond them), or what we might term the harm–care nexus. Here the use of the term nexus signals a need to understand the process of negotiating the tension between giving care and imposing harm as one of being attuned to how animal research structures feelings and generates meanings both inside and outside research facilities. Institutions, managers, and regulators seeking to promote a culture of care need to be mindful of different, sometimes conflicting, understandings of what constitutes good care, and the roles played by (a) infrastructure (b) governance and (c) both human–animal and human–human relations in facilitating and/or restricting care in practice. Here the work of AnNex and other social science and humanities scholarship might play an important role in sharing stories about the experiences of those who work in animal research and in creating spaces for different kinds of conversations between different stakeholder groups.⁵⁴ Our work arguably offers a resource for building empathy and encouraging communication between those with different roles and responsibilities within animal research, and even beyond them,⁵⁵ thereby encouraging recognition of the many different cultures of care which emerge around animal research and the tensions but also potentially productive points of collaboration and synergy which emerge between them.

Notes

- 1 Animals in Science Regulation Unit, *Animals in Science Regulation Unit Compliance Policy* (London: Home Office, 2017), www.gov.uk/guidance/animal-testing-and-research-compliance-with-aspa [accessed 28 November 2019].
- 2 Tania Boden and Penny Hawkins, 'Communicating the Culture of Care – How to Win Friends and Influence People', *Animal Technology and Welfare* (2016), 151–156.
- 3 G. Davies et al., 'Developing a Collaborative Agenda for Humanities and Social Scientific Research on Laboratory Animal Science and Welfare', *PLOS ONE*, 11.7 (2016), 1–12, DOI: 10.1371/journal.pone.0158791. See also Sally Robinson et al., 'The European Federation of the Pharmaceutical Industry and Associations' Research and Animal Welfare Group: Assessing and Benchmarking "Culture of Care" in the Context of Using Animals for Scientific Purpose', *Laboratory Animals*, 54.5 (2019), 421–432, DOI: 10.1177/0023677219887998; Boden and Hawkins, 'Communicating the Culture of Care'.
- 4 Keith Davies and Duncan Lewis, 'Can Caring for Laboratory Animals Be Classified as Emotional Labour?' *Animal Technology and Welfare*, 9.1 (2010), 1–6; Carrie Friese and Joanna Latimer, 'Entanglements in Health and Wellbeing: Working with Model Organisms in Biomedicine and Bioscience', *Medical Anthropology Quarterly* (2018), www.anthrosource.onlinelibrary.wiley.com/journal/15481387 [accessed 4 July 2018]; Jordi López Tremoleda and Angela Kerton, 'Teaching a Culture of Care: Why It Matters', *Revista de Bioética y Derecho*, 15 (2021).
- 5 G. Davies, R. Gorman, and B. Crudgington, 'Which Patient Takes Centre Stage? Placing Patient Voices in Animal Research', in *GeoHumanities and Health*, ed. by Sarah Atkinson and R. Hunt (Cham: Springer, 2020), pp. 141–155; Emma Roe and Beth Greenhough, 'A Good Life? A Good Death? Reconciling Care and Harm in Animal Research', *Social & Cultural Geography*, 24.1 (2021), 49–66, DOI: 10.1080/14649365.2021.1901977; Annabella Williams, 'Caring for Those Who Care: Towards a More Expansive Understanding of "Cultures of Care" in Laboratory Animal Facilities', *Social & Cultural Geography*, 24.1 (2021), 31–48; Carrie Friese, 'Intimate Entanglements in the Animal House: Caring for and about Mice', *The Sociological Review*, 67.2 (2019), 287–298, DOI: 10.1177/0038026119829753; Nathalie Nuyts and Carrie Friese, 'Communicative Patterns and Social

- Networks between Scientists and Technicians in a Culture of Care: Discussing Morality across a Hierarchy of Occupational Spaces’, *Social and Cultural Geography* (2021), <http://eprints.lse.ac.uk/108472/> [accessed 29 January 2021].
- 6 Mike King and Hazem Zohny, ‘Animal Researchers Shoulder a Psychological Burden That Animal Ethics Committees Ought to Address’, *Journal of Medical Ethics* 48.5 (2022) 299–303, DOI: 10.1136/medethics-2020-106945. See also Kirk (Chapter 5).
 - 7 Penny Hawkins and Rebecca Thomas, *Assessing the Culture of Care: A Survey of Network Members*, July 2017, www.researchgate.net/publication/336253708_Assessing_the_Culture_of_Care_a_survey_of_network_members [accessed 26 November 2022]; Robinson et al., ‘The European Federation of the Pharmaceutical Industry and Associations’ Research and Animal Welfare Group’.
 - 8 Tremoleda and Kerton, ‘Teaching a Culture of Care’.
 - 9 Throughout this chapter the term animal technologists is used to describe those who work in animal research facilities providing care and animal husbandry, as well as sometimes assisting in scientific work. Animal technologist is the preferred term used in the UK and by the Institute of Animal Technologists, a professional organisation for those providing care for research animals. Other terms often used are animal technician or tech and animal care staff.
 - 10 These total eighteen interviews in all, five interviewees were each interviewed three times with roughly six months between interviews, the other two interviewees were also interviewed three times, but preferred to be interviewed together.
 - 11 This study has been reviewed and approved through the Queen Mary University of London Research Ethics Committee, 8 April 2013 (QMREC2012/76), and through the Oxford University Central University Research Ethics Committee (CUREC) process, 24 October 2014.
 - 12 For a good example of this see Robinson et al., ‘The European Federation of the Pharmaceutical Industry and Associations’ Research and Animal Welfare Group’.
 - 13 Hanneke Mulder et al., ‘Addressing the Hidden Curriculum in the Clinical Workplace: A Practical Tool for Trainees and Faculty’, *Medical Teacher*, 41.1 (2019), 36–43, DOI: 10.1080/0142159X.2018.1436760.
 - 14 María Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds* (Minneapolis, MN: University of Minnesota Press, 2017); María Puig de la Bellacasa, “‘Nothing Comes Without its

- World”: Thinking with Care’, *The Sociological Review*, 60.2 (2012), 197–216; *Care in Practice: On Tinkering in Clinics, Homes and Farms*, ed. by Annemarie Mol et al. (Verlag, Bielefeld: transcript publishing, 2010), p. 326.
- 15 A. R. Hochschild, *The Managed Heart: Commercialization of Human Feeling* (Berkeley, CA: University of California Press, 2003); Carol Gilligan, *In A Different Voice* (Cambridge, MA: Harvard University Press, 1982); Joan C. Tronto, *Moral Boundaries: A Political Argument for an Ethic of Care* (New York: Routledge, 1993).
 - 16 Brown et al., ‘Culture of Care: Organizational Responsibilities’, in *Management of Animal Care and Use Programs in Research, Education, and Testing*, ed. by Robert H. Weichbrod et al., 2nd edn (Boca Raton: Taylor & Francis, 2018).
 - 17 Friese, ‘Intimate Entanglements in the Animal House’.
 - 18 Friese, ‘Intimate Entanglements in the Animal House’.
 - 19 Davies and Lewis, ‘Can Caring for Laboratory Animals Be Classified as Emotional Labour?’; Angela Kerton and Jordi L. Tremoleda, ‘Emotional Challenges in Our Work with Laboratory Animals: Tools That Support Caring for Others and Yourself’, *Animal Technology and Welfare* 20.1 (2021), 43–60.
 - 20 Robert G. W. Kirk, ‘Care in the Cage: Materializing Moral Economies of Animal Care in the Biomedical Sciences, c.1945–’, in *Animal Housing and Human–Animal Relations: Politics, Practices and Infrastructures*, ed. by Kristian Bjørkdahl and Tone Druglitrø, Routledge Human–Animal Studies Series (London; New York: Routledge, 2016), pp. 167–185.
 - 21 Gail Davies, ‘Locating the “Culture Wars” in Laboratory Animal Research: National Constitutions and Global Competition’, *Studies in History and Philosophy of Science Part A*, 89 (2021), 177–187, DOI: 10.1016/j.shpsa.2021.08.010; Wakana Suzuki, ‘Improvising Care: Managing Experimental Animals at a Japanese Laboratory’, *Social Studies of Science*, 51.5 (2021), 729–749, DOI: 10.1177/03063127211010223.
 - 22 Beth Greenhough and Emma Roe, ‘Attuning to Laboratory Animals and Telling Stories: Learning Animal Geography Research Skills from Animal Technologists’, *Environment and Planning D: Society and Space*, 37.2 (2019), 367–384, DOI: 10.1177/0263775818807720.
 - 23 Richard Gorman and Gail Davies, ‘When “Cultures of Care” Meet: Entanglements and Accountabilities at the Intersection of Animal Research and Patient Involvement in the UK’, *Social & Cultural Geography* (2020), 1–19, DOI: 10.1080/14649365.2020.1814850.
 - 24 Roe and Greenhough, ‘A Good Life? A Good Death?’
 - 25 Kirk, ‘Care in the Cage’; see also Kirk (Chapter 5).

- 26 Robinson et al., 'The European Federation of the Pharmaceutical Industry and Associations' Research and Animal Welfare Group', p. 56.
- 27 Home Office, *Guidance on the Operation of the Animals (Scientific Procedures) Act 1986* (London: Home Office, 2014).
- 28 Tone Druglitrø and Robert G. W. Kirk, 'Building Transnational Bodies: Norway and the International Development of Laboratory Animal Science, ca. 1956–1980', *Science in Context*, 27.2 (2014), 333–357, DOI: 10.1017/S026988971400009X; Carrie Friese, 'Realizing Potential in Translational Medicine: The Uncanny Emergence of Care as Science', *Current Anthropology*, 54.S7 (2013), S129–138, DOI: 10.1086/670805; Eva Giraud and Gregory Hollin, 'Care, Laboratory Beagles and Affective Utopia', *Theory, Culture & Society*, 33.4 (2016), 27–49, DOI: 10.1177/0263276415619685.
- 29 Hochschild, *The Managed Heart*.
- 30 Tone Druglitrø, "'Skilled Care" and the Making of Good Science', *Science, Technology, & Human Values*, 43.3 (2018), 649–670, DOI: 10.1177/0162243916688093.
- 31 Beth Greenhough and Emma Roe, 'Exploring the Role of Animal Technologists in Implementing the 3Rs: An Ethnographic Investigation of the UK University Sector', *Science, Technology, & Human Values*, 43.4 (2017), DOI: 10.1177/0162243917718066.
- 32 European Commission, Directorate-General for Environment, *Caring for Animals Aiming for Better Science – Directive 2010/63/EU on Protection of Animals Used for Scientific Purposes* (Publications Office), 2019, <https://data.europa.eu/doi/10.2779/26419> [accessed 1 February 2023]. European Commission, Directorate-General for Environment, *Caring For Animals Aiming for Better Science – Directive 2010/63/EU on Protection of Animals Used for Scientific Purposes: Animal Welfare Bodies and National Committees* (Publications Office), 2019, <https://data.europa.eu/doi/10.2779/059998> [accessed 1 February 2023].
- 33 Gail Davies, 'Locating the "Culture Wars" in Laboratory Animal Research'.
- 34 Animals in Science Regulation Unit, *Animals in Science Regulation Unit Compliance Policy*.
- 35 King and Zohny, 'Animal Researchers Shoulder a Psychological Burden'.
- 36 Nuyts and Friese, 'Communicative Patterns and Social Networks'.
- 37 Robinson et al., 'The European Federation of the Pharmaceutical Industry and Associations' Research and Animal Welfare Group', p. 2.

- 38 Penny Hawkins and Maggie Jennings, 'The Culture of Care – a Working Concept', <https://norecopa.no/media/7711/culture-of-care-working-concept.pdf> [accessed 26 November 2022].
- 39 Tone Druglitrø, 'Procedural Care: Licensing Practices in Animal Research', *Science as Culture* (2022), 1–21, DOI: 10.1080/09505431.2021.2025215.
- 40 Lynda Birke et al., *The Sacrifice: How Scientific Experiments Transform Animals and People* (Lafayette, IN: Purdue University Press, 2007).
- 41 Robinson et al., 'The European Federation of the Pharmaceutical Industry and Associations' Research and Animal Welfare Group', p. 56.
- 42 Greenhough and Roe, 'Attuning to Laboratory Animals and Telling Stories'; Greenhough and Roe, 'Exploring the Role of Animal Technologists in Implementing the 3Rs'.
- 43 Roe and Greenhough, 'A Good Life? A Good Death?'
- 44 Roe and Greenhough, 'A Good Life? A Good Death?'
- 45 Davies and Lewis, 'Can Caring for Laboratory Animals Be Classified as Emotional Labour?'; American Association for Laboratory Animal Science, 'Cost of Caring' (American Association for Laboratory Animal Science, 2013).
- 46 See Gabrielle King, 'Towards a Culture of Care for Ethical Review: Connections and Frictions in Institutional and Individual Practices of Social Research Ethics', *Social & Cultural Geography* (2021), 1–17, DOI: 10.1080/14649365.2021.1939122.
- 47 Williams, 'Caring for Those Who Care', p. 15.
- 48 Animals in Science Regulation Unit, *Identification and Management of Patterns of Low-Level Concerns at Licensed Establishments* (London: Home Office, 2015), p. 4.
- 49 Eva Haifa Giraud, *What Comes after Entanglement? Activism, Anthropocentrism and an Ethics of Exclusion* (Durham, NC: Duke University Press, 2019), p. 138.
- 50 Thom Van Dooren, *Flight Ways: Life and Loss at the Edge of Extinction* (New York: Columbia University Press, 2014).
- 51 Radhika Govindrajan, *Animal Intimacies: Interspecies Relatedness in India's Central Himalayas* (Chicago, IL; London: University of Chicago Press, 2018).
- 52 See Matei Candea, 'Habituating Meerkats and Redescribing Animal Behaviour Science', *Theory, Culture & Society*, 30.7–8 (2013), 105–128, DOI: 10.1177/0263276413501204; Vinciane Despret (trans. Brett Buchanan), *What Would Animals Say If We Asked the Right Questions?* (Minneapolis, MN: University of Minnesota Press, 2016).

- 53 Animals in Science Committee, *Review of Harm–Benefit Analysis in the Use of Animals in Research* (London: Home Office, November 2017), www.gov.uk/government/uploads/system/uploads/attachment_data/file/662098/Review_of_harm_benefit_analysis_in_the_use_of_animals_in_research.pdf [accessed 1 February 2023]; G. Davies, ‘Harm–Benefit Analysis: Opportunities for Enhancing Ethical Review in Animal Research’, *Laboratory Animals*, 47.3 (2018), 57–58, DOI: 10.1038/s41684-018-0002-2.
- 54 Beth Greenhough and Hibba Mazhary, *Care-Full Stories: Innovating a New Resource for Teaching a Culture of Care in Animal Research Facilities*, 2021.
- 55 For an insightful commentary on the risks of marginalising more critical activist perspectives see Giraud (Chapter 8).