

Giraud E and Hollin GJS (2016) 'Laboratory Beagles and Affective Co-productions of Knowledge'. In: M Bastian, O Jones, N Moore and E Roe (eds), *More-than-Human Participatory Research*. New York and London: Routledge.

Laboratory beagles and affective co-productions of knowledge

The Beagle's excellent disposition and gay personality are two [of] its greatest assets, because special handling is seldom necessary and a minimum amount of restraint is required for most experimental procedures (Anderson, 1970: 4).

The above account of beagles' value to experimental science comes from a researcher based at the first large-scale experimental beagle colony at the University of California, Davis (1951-1986). The quotation is indicative of the messy combination of cultural and scientific factors that led to the animals' consolidation as the standard laboratory dog and makes evident that the animals' affective qualities – their 'excellent disposition' and 'gay personality' – lie at the core of their experimental value. The tight link between affect and epistemology has been noted in previous research about laboratory dogs (e.g. Dror, 1999; Degeling, 2008), with dogs in general focused on in a large body of cultural research, due to drawing together issues including: the historical standardization of laboratory animals (Kirk 2010); connections between veterinary and medical research (Bresalier, Cassidy and Woods, 2015); and ethical debates surrounding animal research (Lederer, 1992). These latter concerns are brought to the fore when focusing on beagles specifically, due to the breed's affective qualities being so closely aligned with beagles' consolidation as the standard laboratory dog. Davis, moreover, is a privileged site through which to explore the standardization of beagles; although the breed had been used in research prior to the 1950s the experiments at Davis consolidated their use (Thompson, 1989). As researchers involved with the project noted: 'the many arguments that can now be advanced for the use of this animal were unknown, or at least unsupported, when the decision to employ beagles in these experiments was made in 1950', and – in addition to the breed's specific qualities – the scale of these experiments at Davis resulted in the 'continued use of the beagle in subsequent

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experiments' due to the need for intercomparing data in the same animal model' (Thompson, 1989: 25). Research generated at Davis continues to inform the contemporary management of laboratory beagles (Tomkins et al, 2011), with beagles acting as the standard dog for use in laboratory work in a range of contexts (Joint Working Group on Refinement, 2004), and contemporary licensing standards (which prescribe the amount of space and levels of social interaction required for dogs) based on the needs of beagles (e.g. EU, 2010).

The ethical significance of affect in the beagle laboratory

In this chapter we argue that the beagle's reputation as being an amenable research subject is striking, firstly, because of the way beagles' affective qualities become tied to economic considerations around the cost of research, and, secondly, because it is theoretically informative. The use of dogs in general, and beagles in particular, within laboratory work, elucidates tensions between more-than-human approaches and participatory research, tensions which hinge on these perspectives' contrasting understanding of what it means to 'co-produce' knowledge (as Bastian et al argue in the introduction). We suggest, more specifically, that that beagles' embodied histories make it less likely for them to signify distress or to resist experimental obligations in ways that could signify a lack of consent, and that this calls into question the suggestion that affective relations with animals equate to more participatory models of research.

At Davis the dogs' behaviour and, indeed, their personalities demonstrably shaped the research space, the care-taking practices that were employed and even the choice of personnel at the site (Giraud and Hollin, 2016). In line with understandings of participation and non-human agency that are dominant within more-than-human geographies (Hinchcliffe et al, 2005; Whatmore 2006; Anderson and Harrison 2010; Braun and Whatmore 2011), or science and technology studies (Jasanoff, 2004; Harbers 2005; Pickersgill 2012), knowledge

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generated at Davis could thus be seen as co-produced by researchers, care-takers, beagles, spatial arrangements – and a host of other actors – in the sense of being co-shaped by an assemblage of agencies that are irreducibly entangled. From a participatory research perspective, in contrast, the role of beagle agency would not necessarily be perceived as co-production. Within socio-economic theory (Ostrom 1990), radical geographic contexts (Pickerill and Chatterton 2006) or social movement studies (Borda, 2001), for instance, understandings of 'co-production' are closely linked to a social justice agenda that sees the aim of participation as being to improve the quality of life of those involved (Ostrom 1996). Participatory approaches to research, moreover, entail research partners having the potential to radically re-shape the production of knowledge to suit their own needs (Chatterton and Pickerill 2010). As suggested by the opening quotation, at Davis – in contrast – while the beagles did have agency in shaping the research process, this agency was moulded in ways that ensured the animals did not ultimately disrupt pre-determined experimental goals, and foreclosed alternative ethical or epistemological outcomes. As we will discuss later, this operated at both the level of individual beagles and at the species level where breeding has selected for docility and amenability.

Moreover, the beagles at Davis do not just elucidate tensions between the different understandings of 'participation', or 'co-production', at play in particular disciplinary contexts. In illustrating the vulnerability of affect to instrumentalization, and its role in moulding compliant research subjects, beagles raise questions about the way certain more-than-human approaches have depicted affective human-animal relations as generating ethical responsibility towards specific animals through situated affective encounters (e.g. Haraway, 2008; Despret, 2004, 2013).

Materials

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In order to explore some of the tensions surrounding the ethical potential of affect, this chapter takes a lead from recent calls to focus on the longer histories and wider contexts of contemporary relations in the laboratory (e.g. Johnson 2015). We adopt a socio-historical perspective to explore the participatory potentials that were created – and undermined – with the consolidation of beagles as standardized laboratory dogs during the mid-20th century. Key Anglo-American examples of canine breed-selection, care-taking developments and colony-maintenance, which contributed to beagles' eventual standardization, are drawn on to illustrate the ambivalent role of affect in affording non-humans a more participatory role in the research process. Whilst a range of important moments in the breeding of experimental dogs during the first half of the 20th century are used to establish some general context, in terms of primary materials our focus is on scientific papers and reflections generated by researchers at the first experimental beagle colony at Davis. Before turning to beagles directly, however, it is necessary to flesh out the existing relationships between participation, more-than-human research and affect.

Affect and the ethics of participation in laboratory work

Recent debates about affect can be contextualised as part of broader research within multispecies geographies, which has begun asking how to reconcile questions of social justice with more-than-human frameworks (e.g. Collard and Gillespie, 2015). These issues are brought into focus within this text around the more specific question of how to relate ethical approaches more commonly associated with participatory research to more-than-human contexts (see Bastian et al's introduction to this volume). Various mechanisms have (or at least can) be introduced to afford human publics a more active participatory role in political contexts, such as consensus decision-making (e.g. Cornwell 2011), or involving communities in co-producing infrastructures that affect their everyday lives (Ostrom 1996).

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Similar mechanisms have been explored in relation to the production of scientific knowledge, from consensus-conference models that give publics an opportunity to debate the direction of laboratory science (Haraway 1997) to the co-management of natural resources (Berkes 2008). When seeking to engage with non-humans, however, many of these mechanisms are seen as un-workable due to their inability to participate through these formal processes.

Affect has been a pivotal means of overcoming problems of communicative capacity, as affect is believed to open space for alternative, non-linguistic, modes of communication between species (Lorimer 2007; Greenhough 2014). This communication has been described as 'anthropo-zoo-genesis' (Despret 2004) or 'affective attunement' (Willett 2014), and is seen to be grounded in compassion that is generated through 'corporality' (Acampora 2006) and 'somatic sensibilities' (Greenhough and Roe 2011). Without eliding important distinctions between these perspectives, what these accounts share is the argument that affective bodily relations with animals – often those emerging through everyday care-taking practices and interactions – create space for animals to assume a more active role in the production of knowledge.

As with other key definitions of affect (e.g. Lee 2008), Jamie Lorimer understands affect as a quality of actors that designates the organism's capacity to affect others and be affected in turn (Lorimer, 2007: 915). While not prescriptive in the relations it fosters, affect is believed to encourage and sustain particular forms of relating. So, for example, if this understanding of affect is applied to beagles, the beagle's 'charismatic' characteristics (e.g. their non-aggressive traits and enjoyment of human attention) could be seen as affecting researchers in various ways that may lead them to care for the animals and celebrate their 'gay personality'; care-taking behaviours which – in turn – may enable the beagles to respond in a 'well disposed' way to researchers' own affects.

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Importantly, and while acknowledging that different affects might facilitate different modes of relating (not all of which are congenial as that between humans and beagles), a number of thinkers, again including Lorimer (2015: 25), have pointed to affect's ethical potential; openness to being 'affected' can create opportunities to move beyond relationships that are simply co-shaping, to embed emotional engagement and ethical responsibility into these relationships. As Matei Candea notes when relating Stengers and Despret to multispecies contexts, if space is created for affective encounters within the laboratory this has not only been seen as opening up vectors of communication between researchers and research-partners that enable animals to signify their needs (e.g. Despret 2004), but as allowing these partners to 'object' to certain practices (Candea 2013: 108). Affect can, in other words, foster continuous ethical obligations towards research partners (Haraway 2008; Greenhough and Roe 2011). This intersects with the emphasis within participatory research on the need for continuous ethical responsibility to individuals implicated in the research process; a responsibility not satisfied by completing an official ethics form or simply adhering to standard ethical procedures (Banks et al 2013).

The participatory potential of affect, and its capacity to sustain ethical obligations, however, is troubled when examining the emergence of the experimental dog and subsequent consolidation of beagles as *the* experimental breed. By focusing upon the longer histories of experimental dogs we can see that affective dispositions of sentient beings are open to systematic manipulation. Knowledge gained with experimental dogs may be co-produced, in the sense of being entangled and co-shaped, but may still foreclose ethical and epistemic opportunities. Elsewhere (Giraud and Hollin, 2016) we consider this issue in relation to experimental procedures; here, however, we focus on the process of selecting animals for

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experimental research, due to the profound implications selection processes have for participatory relations in the present.

Why Dogs?

Discussions around the workings of affect are helpful in elucidating why the use of dogs in experimental research became so widespread from the late 19th century onwards. Attention to bodily relations played a key role in the use of dogs as experimental research subjects within late 19th and early 20th century laboratory research, but dogs also illustrate the ambivalent function of affect in this process. To give a brief overview of the evolution of canine research, by the late 19th century dogs were being used as models for human disease due to a range of physiological, practical and affective factors. As canine scientist J.P. Scott describes:

The dog has long been a favorite animal in medical research, partly because of its size and docility but also because of the availability of large numbers of stray and unwanted dogs at low cost (Scott 1970: 723).

This emphasis on a particular affective disposition an animal may hold, namely here the 'docile' dog, alongside other – more 'mundane' – factors, is present not just in narratives of research scientists but is reiterated within historical analyses of early (and often unsuccessful) experiments with blood transfusion in Britain and North America. Dogs were not solely used due to their physiological affinities with humans but because of their affective – and hence their communicative – capacities:

...canines were often favoured because they were easy to obtain, relatively easy to handle, and through their expressions and postures their behaviour was easily 'read.' As many pet owners could confirm, their dogs were able to communicate to humans a sense of their physical and emotional wellbeing (Degeling, 2008: 25).

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Echoing Despret and Haraway, trans-species communication derived from affective relations was seen as critical in enabling care-takers and researchers to interpret animal behaviour and adjust the experiment accordingly. In Otniel Dror's analysis of physiology in this period he, accordingly, argues that attention to well-being was not simply an ethical concern, but an experimental one. Dror, citing the work of physiologist Moritz Schiff, contends that animal emotion had to be managed to ensure that results were standardized, as distressed animals produced experimental anomalies: 'The eradication of pain was not "merely an optional noble gesture" but "aided correct scientific observations"', 'Physiological knowledge', in other words, 'demanded pain-free animals' (Dror, 1999: 210).

In the early 20th century, the management of emotion was again emphasised in Anglo-American physiology, but this time it was not due to dogs' capacities to be 'read' by experimenters. Instead – and foreshadowing the ultimate decision to focus on beagles – the emphasis had shifted to the value of dogs' own affective qualities:

The very qualities that endeared dogs to humans made them vulnerable to researchers [...] dogs, in light of their tractable nature, were used in the most extreme experiments, which often involved considerable pain (Lederer, 1992: 64).

The acknowledgement of dogs' affective qualities, and the potential for these qualities to give rise to productive relations in the laboratory, had intensified by the 1950s. This intensification occurred in relation to psychological experiments, where dogs became the focus of work to determine whether environmental factors could have a detrimental psychological impact (Kirk, 2014).

Dogs thus illustrate the significance of specific affective capacities in decisions to select a particular species for laboratory work, because their capacity to form bonds with humans was

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at the heart of initial decisions to use dogs in experimental research. While affect played a pivotal role in facilitating trans-species communication within canine research, the instrumental nature of this communication – its role in easing experimental progress, rather than re-shaping predetermined goals – means that dogs trouble any easy connection that might be made between affective-relations and more participatory forms of co-production. Returning to our case study at the University of California Davis, this troubled relationship is particularly evident in the decision to use dogs, and specifically beagles.

The Dogs of Davis

A closer look at the rationale behind the first large-scale beagle colony, at the Radiobiology Laboratory in Davis, helps to elucidate this troubling role of affect. As touched on above, the laboratory was funded through the Manhattan Project in order to study the long-term effects of exposure to various forms of radiation. As is noted by Davis researcher Douglas McKelvie and colleagues, the experimental demands ensured that a very particular type of animal was required:

...an animal with a prolonged life-span was necessary. This requirement eliminated such animals as the mouse, rat, and guinea pig. In addition, the physiological and anatomical features of these animals are not closely related to those of man. The natural choice, some species of nonhuman primate, was ruled out by high cost and difficulties in procurement. The final decision was to use the dog, since it was readily available, easy to handle, adapted to laboratory environment, and was especially responsive to human care (McKelvie et al. 1971: 263).

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In this extract it is immediately noticeable how affect and cost-effectiveness are treated more-or-less synonymously, as factors to be considered and controlled; the fact that dogs are cheap *and* the fact that they are responsive to human care are both taken into consideration and are believed to make the dog a valuable tool for scientific research. The affective qualities of dogs, moreover, were touched on by all of the key researchers at Davis (e.g. Anderson, 1970), and in broader research literatures that stress their 'social relationship with man' and 'docility' (Scott, 1970: 723), suggesting these qualities make dogs less intimidating to handle than other research animals under consideration such as calves, sheep and pigs (Zinn 1968: 1884-1885).

In addition its use of dogs, the colony at Davis also needs to be contextualised in relation to a broader push to standardize laboratory animals, which came to the fore by the early 20th century (Kirk 2010). In relation to dogs specifically, researchers' had indicated discontent with the use of 'random source' dogs (e.g. Zinn, 1968: 1883) because:

The 'normal' [i.e. 'available'] dog could be severely anemic, infested with fleas, lice, ticks, and intestinal parasites such as amoebae. He could have struggled to survive in a state of malnutrition in a poor neighbourhood, without the care and attention necessary for normal growth and development. He may be influenced by an extreme sense of insecurity and anxiety, if such psychic states exist in dogs – who knows? Even more, consider the possible psychologic trauma produced by his captivity, transportation to the laboratory, neglect, and nonsympathetic care during his imprisonment. His sole visitor was the disinterested caretaker who handled the dog roughly in response to the call of the investigator for a 'normal dog' for today's 'crucial' experiment... Normalcy should be

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supported by criteria of care and health in dogs as well as in man regardless of the demands of effort and funds. Treat not the dog like a dog but more like a man, or the experimental results will 'go to the dogs' (Burch 1959: 805-806).

This evocation of the emotional state of the 'random source' dog seems to be advocating precisely the mode of situated attention and care towards individual animals, which has been called in theoretical contexts. In this instance, however, a concern for individual animals is tightly bound up with epistemological concerns, just as laboratory 'captivity', 'nonsympathetic care' and 'disinterest' were seen as exacerbating this state of anxiety, 'care' and 'good health' were seen as integral to ameliorating these problems and hence to creating meaningful experimental outcomes. The push to standardize results through standardizing dogs, as demonstrated at Davis, thus reflected the need for a steady supply of animals with an equally steady temperament and, as Burch notes, this could only be achieved through carefully managing the affective responses of the animals as well as their breeding.

Standardizing beagles

Given that, for a variety of reasons, so few breeds met the requirements of the laboratory (Andersen 1970: 3-4), in the mid-20th century serious consideration was given to developing a new breed of dog specifically for research purposes (Zinn 1968: 1886). Indeed, attempts to develop such a dog appear to have been made in Oregon (McKelvie et al. 1971: 281). Nonetheless, the beagle quickly became established as *the* standardised laboratory dog for it had a vast number of characteristics it had in its favour (to expand on the opening quotation):

The most desirable qualities of the Beagle as an experimental dog are its medium size, moderate length of hair coat in two or more colors, even

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temperament, adaptability to living in groups, representative conformation of the dog, and the lack of need for cosmetic surgery. The Beagle's excellent disposition and gay personality are two of its greatest assets, because special handling is seldom necessary and a minimum amount of restraint is required for most experimental procedures. Its excellent disposition is the result of culling ill-tempered dogs throughout the history of the breed. Although a wide range of behavior traits can be identified in the Beagle, they rarely show aggressiveness, timidity, or shyness. (Andersen 1970: 4)

As with the decision to focus on dogs in general, therefore, the beagle's affective qualities are suggestive of how they are also linked to decisions around the economic rationales for using a particular dog breed. Because 'special handling' is rarely needed with the beagle and because they do not need to be 'restrained' (and pictures of the veterinarians at work at Davis (e.g. McKelvie & Andersen 1966: 32) show research being conducted without so much as a lead); the beagle's gay personality actually makes the experiment cheaper to run *and* makes the pre-established goals of the experiment easier to achieve (Giraud and Hollin 2016). Once again, it is worth noting that this is not a one-off claim. The same desirable characteristics of the beagle are stressed repeatedly both by researchers from Davis (e.g. Andersen & Goldman 1960: 129; Solarz 1970: 453) and elsewhere, who stress their 'temperament' (Zinn 1968: 1885) and 'extreme degree of nonaggressiveness' (Scott 1970: 723).

Despite certain hopes for the role of affect, here we see that it does not, however, afford the beagles' agency within the production of knowledge as would be demanded from the perspective of participatory research. As made explicit in Anderson's characterisation of beagles' 'gay personality', for instance, the breed was specifically selected because the animals' temperament made them less likely to resist experimental procedures and disrupt the

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experiment. This temperament, moreover, was actively constructed through culling 'ill tempered' animals; what results, therefore, is an animal who is conducive to laboratory work. The barriers to giving beagles greater agency in the research project, therefore, are bound up in their embodied biological histories and, thus, cannot easily be resolved through creating the space to learn how the animals signify resistance, in the way that Haraway and Despret suggest, an issue taken up in more depth below.

This is not to say that affective relations with beagles give no scope for animals to shape the production of knowledge, in the sense of co-shaping discussed above; as we discuss elsewhere (Giraud and Hollin, 2016), at Davis the spatial environment of the colony was shaped through knowledge gained via affective relations. This knowledge led to the development of new cage-designs and care-taking practices (Anderson and Goldman, 1950; Anderson and Hart, 1955; Anderson, 1964; Solarz, 1965), which were designed to maximise animal happiness. Even though cage design was – seemingly – co-shaped, however, the ultimate aim of these re-designs was to ensure the dogs' on-going compliance in the experiments. This research, therefore, was decisively 'un-cosmopolitical' in Stengers's sense (2005; 2010; 2011), because a pre-determined experimental goal had already been decided and – though knowledge gained from affective relations shaped the way this goal was achieved – it did not shape the end outcome of the experiments.

The problems beagle research pose to extending questions of participation beyond the human are brought into focus if they are related to participatory research more explicitly. As Sherry Arnstein (1969) notes, participation can take a number of forms: From maximum levels of 'citizen power' (such as delegating substantial power or passing all control to citizens and research partners), to more 'tokenistic' gestures (that include consultation). She warns, moreover, that certain processes can serve a placating purpose by giving the illusion of

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participation whilst actually being a form of 'non-participation' that goes 'through the empty ritual of participation' without affording others 'the real power needed to affect the outcome of the process' (1969: 216). Understood in Arnstein's terms, although the Davis beagles had a degree of agency, the re-aligning of this agency to meet existing experimental goals and to prevent the beagles from disrupting intended 'outcomes' could be seen as precisely the sort of 'manipulation' that she equates to 'non-participation'. With beagles, moreover, it is especially difficult to move beyond 'manipulative' forms of 'non-participation', not just because of power relations within the experimental space itself, but because of longer breed histories, which actively discourage any forms of behaviour that do not signify 'consent'.

Beagles, participation and co-production

The role of beagles in laboratory science, therefore, does not only raise questions about the 'levels' of participation that can be afforded to experimental animals, but foregrounds questions surrounding resistance and consent. Concerns about the power dynamics of experimental research have already been raised within more-than-human approaches. Matei Candea, for example, argues that the difficulty in creating space for animals to signify their needs, especially in the context of laboratory science, arises because it is hard to create space for animals to 'object' to the 'impositions of experimental obligations' and 'resist the authority of science' (2013: 109). These concerns assume a more profound significance through the lens of participatory research, which emphasises the importance of allowing research partners to withdraw consent at any stage in the research process, even if formal procedures were adhered to throughout (Banks et al 2013). If animals have been selectively bred to eliminate certain affective qualities or – on an individual level – had their affective responses systematically manipulated with the experimental context, then could foreclose future opportunities to signify 'objection'.

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In beagle research the broad difficulties associated with consent are compounded, because the affective relations that could – potentially – be a route into understanding when consent is being withdrawn (Haraway 2008; Greenhough and Roe 2011; Despret 2013) actually become a barrier to the participatory co-production of knowledge. The animals' amenability, coupled with the dynamics of the research process, makes them unlikely to 'object' to what is happening to them even if – technically speaking – space is provided for them to do so. At Davis, for instance, the main signs of beagle discontentment were perceived to be 'digging', 'pacing' and fence-jumping' (Andersen & Goldman, 1960: 129-130), and a large body of research (gathered in Anderson, 1970) was developed about how to engage with the animals' affective qualities in ways that eliminated these activities in the future. This process of discouraging disruptive behaviours was successful, with researchers eventually being able to handle the animals in routine activities entirely without restraints (Giraud and Hollin, 2016: 12). Davis is not, moreover, the exception, with contemporary research continuing to take a close interest in beagle 'body language' and experiment with practices which could produce more 'consistent and meaningful' data through eliminating responses such as 'shivering, urination or defecation, and panting' (e.g. Döring et al, 2016: 18, 21). The specific embodied histories that underpin beagles' consolidation as experimental dogs, and ongoing manipulation of these responses on an individual basis within specific experimental contexts therefore, complicates the potential for affect to foster 'mutually beneficial' outcomes, in the manner intended by participatory research (e.g. Ostrom 1995; Banks et al 2014).

As Thom van Dooren notes (2014: 101-108) it is vital to pay attention to the longer histories and contexts that frame – even seemingly convivial – affective encounters. In Despret's influential account of how trans-species communication can occur through bodily engagement, for instance, she draws on the work of ethologist Konrad Lorenz (2004: 128-

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132). Whilst agreeing with Despret's analysis of Lorenz's work with geese as being 'grounded in relationships of care that enabled the formation of new kinds of knowledge', van Dooren suggests that 'his technique, while good for learning, may not have been so good for geese' (2014: 105). The deliberate imprinting of birds, he argues, produces a '*captive* form of life' that produces 'a lifelong attachment' to humans at the expense of relationships with other members of its species (103, italics in original). These arguments are both pertinent to and complicated by laboratory beagles, who highlight the importance of paying attention to the longer embodied histories that frame particular affective encounters, at the level of the breed as well as the individual. Without paying attention to the constitutive relations that frame affective encounters there is a danger that a lack of substantive 'objection' could be used as evidence of the lack of coercion involved in experimental contexts, or even a sign of care as with Despret, in a manner that elides any need to reflect still further on experimental ethics. This danger has been present throughout the contemporary history of canine experimentation, as we have shown. In the first decade of the 20th century, moreover, researchers' and care-takers' affective work in ensuring animal 'happiness' was used to deflect anti-vivisectionist criticism, and drawn on as evidence for the animals' well-being. As Dror argues:

Cannon's [1909] code of regulations governing laboratory procedures involving animals, for example, was written explicitly with the antivivisectionists in mind [...] Like many of his contemporaries, he adopted the approach of the late nineteenth-century physiologists who repeatedly emphasized their humanitarian concerns and their use of anaesthetics when confronted by antivivisectionists' charges, downplaying the physiological rationale behind their particular concerns with suffering. (Dror, 1999: 235)

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This logic continued into the mid-20th century, with researchers at Davis themselves acknowledging that guided tours of the facility were designed to illustrate the dogs' well-being to the public. The Veterinary School's annual report, for instance, describes how 'several hundred people visit the colony annually and lecturing on kennel activities continue. An open-door policy has averted public criticism by those opposed to the use of dogs for research' (School of Veterinary Medicine, 1961: i). In pointing to the level of care given to animals, researchers were able to mask the ultimately instrumental function of affect in ensuring animal distress did not disrupt the experiment. Affective relations, therefore, were not just pivotal to the selection and on-going care of dogs, in ways that ensured smooth experimental progress, but were used to diffuse criticism from anti-vivisectionists for whom dogs had been a potent weapon in gaining public sympathy since the 19th century (again in campaigns within both British and North American contexts and US, see French, 1975; Elston, 1987; Lederer, 1987).

Conclusion

Beagle research, therefore, poses conceptual and political questions about how to foster dialogue between participatory research and more than human approaches, whilst problematizing the potential for affect to facilitate this dialogue. As van Dooren notes, there can be a distinct violence in affective encounters that are portrayed as mutually beneficial; as with his critique of certain practices within avian research, some of the processes of human-beagle engagement that occurred both at Davis and within longer histories of dog breeding took 'advantage of an ontological openness' (in this instance the pliable temperament of the beagles) 'to produce an altered way of life' (2014: 102). To echo van Dooren, an interrogation of particular sets of relations involved in beagle research is not to deny that species are entangled, or inevitably co-shape one another, it is – however – intended to

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foreground how certain, mutually affective, encounters might occur 'at the expense of a whole set of other ways of being' (2014: 103). Any affective encounter is contingent on an assemblage of environmental, contextual and historical factors that can support certain affects (those that ensure the beagle is a compliant research subject, for instance) and foreclose others (such as beagle boisterousness).

While affect might be a fertile ground for trans-species communication (Despret 2004; Roe and Greenhough 2014) or even care (Haraway 2008; Davies 2012), further questions need to be asked about the limitations of these processes and the potential for affect to be used for manipulative as well as participatory ends. Beagles, more broadly, raise urgent questions about whether it is possible to depict animals as co-partners – in the sense intended by participatory research – if their longer breed histories, their spaces of encounter, and who they engage with, foreclose the potential to withdraw consent (Banks et al 2013) or go beyond having a limited or tokenistic influence (Arnstein, 1969), in order to shape the research in mutually beneficial ways.

References

- Acampora, RR 2006, *Corporeal compassion*. Pittsburgh, University of Pittsburgh Press.
- Andersen, AC 1964, 'Air conditioned cages designed to minimize kennel problems'. *Laboratory Animal Care*, vol. 14(4), pp. 292–303.
- Andersen, AC 1970, *The beagle as an experimental dog*. Ames, Iowa, The Iowa State University Press.
- Andersen, AC & Goldman, M 1960, 'An evaluation of an outdoor kennel for dogs'. *Journal of the American Veterinary Medical Association*, vol. 137(2), pp.129–135.
- Andersen, AC & Hart, G 1955, 'Kennel construction and management in relation to longevity studies in the dog'. *Journal of the American Veterinary Medical Association*, vol. 126, pp. 366–373.
- Anderson, B and Harrison, P (eds) 2010, *Taking place: Non-representational theories and geography*. Farnham, Ashgate.

- Giraud E and Hollin GJS (2016) 'Laboratory Beagles and Affective Co-productions of Knowledge'. In: M Bastian, O Jones, N Moore and E Roe (eds), *More-than-Human Participatory Research*. New York and London: Routledge.
- Arnstein, SR 1969, 'A ladder of citizen participation'. *Journal of the American Institute of Planners*, vol. 35(4), pp. 216-224.
- Banks, S et al 2013, 'Everyday ethics in community-based participatory research'. *Contemporary Social Science*, vol. 8(3), pp. 263-277.
- Banks, S et al 2014, 'Using co-inquiry to study co-inquiry: Community-university perspectives on research collaboration'. *Journal of Community Engagement and Scholarship*, vol. 7(1).
- Berkes, F 2009, 'Evolution of co-management: Role of knowledge generation, bridging organizations and social learning', *Journal of Environmental Management*, vol. 90, pp. 1692-1702.
- Borda, OF 2001, 'Participatory (action) research in social theory: Origins and challenges', in P Reason and H Bradbury (eds), *Handbook of action research*, pp.27-32, London, Thousand Oaks and New Delhi, Sage.
- Bresalier, M Cassidy, A and Woods, A 2015, 'One health in history', in J Zinnstag (eds) *One health*, Croydon, CAB International.
- Braun, B and Whatmore, S 2011, *Political Matter: Technoscience, democracy and public life*. Minneapolis: University of Minnesota Press.
- Burch, GE 1959, Of the normal dog. *The American Heart Journal*, vol. 58(6): 805–806.
- Candea, M 2013, Habituating meerkats and redescribing animal behaviour science. *Theory, Culture & Society* vol. 30(7-8), pp.105–128.
- Chatterton, P and Pickerill, J 2010, 'Everyday activism and transitions to postcapitalist worlds'. *Transactions of the Institute of British Geographers*, vol.35 (4), pp. 475-490.
- Collard, R & Gillespie, K 2015, *Critical Animal Geographies*. London: Routledge.
- Cornwell, J 2011, 'Worker co-operatives and spaces of possibility: An investigation of subject space at collective copies'. *Antipode*, vol. 44(3), pp. 725-744.
- Cutts, BA, White, DD & Kinzig, AP 2011, 'Participatory geographic information systems for the co-production of science and policy in an emerging boundary organization'. *Environmental Science and Policy*, vol. 14, pp. 977-985.
- Davies, G 2012, 'Caring for the multiple and the multitude: Assembling animal welfare and enabling ethical critique'. *Environment and Planning D: Society and Space*, vol. 30(4), pp.623–638.
- Davies, G 2013, 'Mobilizing experimental life: Spaces of becoming with mutant mice'. *Theory, Culture & Society*, vol.30(7-8), pp. 129–153.

- Giraud E and Hollin GJS (2016) 'Laboratory Beagles and Affective Co-productions of Knowledge'. In: M Bastian, O Jones, N Moore and E Roe (eds), *More-than-Human Participatory Research*. New York and London: Routledge.
- Degeling, C 2008, 'Canines, consanguinity and one-medicine: All the qualittes of dog except loyalty'. *Health and History*, vol. 10(2), pp. 23–47.
- Despret, V 2013, 'Responding bodies and partial affinities in human-animal worlds'. *Theory, Culture & Society*, vol. 30(7-8), pp. 51–76.
- Despret, V 2004 'The body we care for: Figures of anthropo-zoo-genesis'. *Body & Society*, vol.10(2-3), pp. 111–134.
- Doubleday, R 2007, 'Organizing accountability: Co-production of technoscientific and social worlds in a nanoscience laboratory'. *Area*, vol. 39(2), pp. 166-175.
- Dror, O 1999, 'The affect of experiment: The turn to emotions in Anglo-American physiology, 1900-1940'. *Isis*, vol. 90(2), pp. 205–237.
- Döring, D et al 2016, 'Behaviour of laboratory beagles: assessment in a standardised behaviour test using novel stimuli and situations', *Journal of veterinary behaviour*, vol. 11, pp. 18-25.
- Elston, MA 1987, 'Women and anti-vivisection in Victorian England, 1870-1900', in N Rupke (ed.), *Vivisection In Historical Perspective*. New York, Routledge, pp. 25-294.
- EU Directive 2010/63/EU of 22 September 2010 on the protection of animals used for scientific purposes.
- French, R 1975, *Antivivisection and Medical Science in Victorian Society*. Princeton and London, Princeton University Press.
- Giraud, EHS & Hollin, GJS (2016), Care, laboratory beagles and affective utopia. *Theory, Culture & Society*, Epub, DOI: 10.1177/0263276415619685
- Greenhough, B & Roe, E 2011, Ethics, space, and somatic sensibilities: Comparing relationships between scientific researchers and their human and animal experimental subjects. *Environment and Planning D: Society and Space*, vol.29(1), pp. 47–66.
- Greenhough, B 2004, 'More than human geographies', in R Lee et al (eds), *SAGE Handbook of Human Geography*, pp.94-119. London, Thousand Oaks and New Delhi, Sage Publications.
- Haraway, D 2008 *When Species Meet*. Minneapolis, University of Minnesota Press.
- Haraway, D 1997 *Modest_Witness@Second_Millennium. FemaleMan©_Meets_OncoMouse™*. New York and London, Routledge.
- Harbers, H (ed.) 2005, *Inside the Politics of Technology*. Amsterdam, Amsterdam University Press.

- Giraud E and Hollin GJS (2016) 'Laboratory Beagles and Affective Co-productions of Knowledge'. In: M Bastian, O Jones, N Moore and E Roe (eds), *More-than-Human Participatory Research*. New York and London: Routledge.
- Hinchliffe, S, Kearnes, MB, Degen, M and Whatmore, S 2005, 'Urban wild things: a cosmopolitical experiment'. *Environment and Planning D: Society and Space*, vol. 23(5) pp. 643–658.
- Jasanoff, S 2004, *States of Knowledge: The co-production of science and the social order*. London: Routledge.
- Johnson, E 2015, 'Of lobsters, laboratories and war: Animal studies and the temporality of more-than-human encounters'. *Environment and Planning D: Society and Space*, vol.33(2), pp. 296-313.
- Joint Working Group on Refinement, 2004. Refining dog husbandry and care. Eighth report of BVAAWF/FRAME/RSPCA/UFAW Joint Working Group on Refinement. *Lab. Anim.* 38 (Suppl. 1), 1e94.
- Kirk, R 2014, 'The invention of the "stressed animal" and the development of a science of animal welfare, 1947-86', in D Cantor & E Ramsden (eds), *Stress, Shock, and Adaptation in the Twentieth Century*, pp.241-263. Rochester, NY, University of Rochester Press.
- Kirk, R 2010, 'A brave new animal for a brave new world: The British Laboratory Animals Bureau and the constitution of international standards of laboratory animal production and use, circa 1947-1968'. *Isis*, vol. 101(1), pp. 62-94.
- Lederer, S 1992, 'Political animals: The shaping of biomedical research literature in Twentieth-Century America', *Isis*, vol. 83(1), pp. 61–79.
- Lorimer, J 2007, 'Nonhuman charisma'. *Environment and Planning D: Society and Space*, vol. 25(5), pp. 911-932.
- Lorimer, J 2015, *Wildlife in the Anthropocene*. Minneapolis, University of Minnesota Press.
- McKelvie, DH et al 1971, 'The standardized dog as a laboratory animal', in National Academy of Sciences (ed.), *Defining the Laboratory Animal*, p.628. Washington, DC, National Academy of Sciences.
- Ostrom, E 1990, *Governing the Commons*. Cambridge and New York, Cambridge University Press.
- Ostrom, E 1995, Crossing the great divide: Co-production, synergy and development. *World Development*, vol. 24(6), pp. 1073-1087.
- Pickerill, J & Chatterton, P 2006, 'Notes towards autonomous geographies: Creation, resistance and self-management as survival tactics'. *Progress in Human Geography*, vol. 30(6), pp. 730-746.
- Pickersgill, M 2012, 'The co-production of science, ethics and emotion'. *Science, Technology & Human Values*, vol. 37(6), pp. 579-603.

- Giraud E and Hollin GJS (2016) 'Laboratory Beagles and Affective Co-productions of Knowledge'. In: M Bastian, O Jones, N Moore and E Roe (eds), *More-than-Human Participatory Research*. New York and London: Routledge.
- Reinert, H & Smith G 1963, 'The establishment of an experimental beagle colony'. *Journal of the Animal Technicians Association* vol.14(2), pp. 73–82.
- Roe E & Greenhough B, 2014 'Experimental partnering: Interpreting improvisory habits in the research field'. *International Journal of Social Research Methodology*, vol. 17(1), pp. 45-57.
- School of Veterinary Medicine, U. of C. 1961, *Tenth annual progress report. AEC Project No. 4*
- Scott, J 1970, 'A laboratory breed'. *Science*, November vol. 723.
- Solarz, AK 1970, 'Behavior', in AC Andersen (ed), *The Beagle as an Experimental Dog*. Ames, Iowa, The Iowa State University Press, p. 616.
- Stengers, I 2010, *Cosmopolitics I*. Minneapolis, University of Minnesota Press.
- Stengers, I 2011, *Cosmopolitics II*. Minneapolis, University of Minnesota Press.
- Stengers, I 2005, 'The cosmopolitical proposal', in B Latour & P Weibel (eds), *Making Things Public: Atmospheres of democracy*, pp.994-1003. Cambridge, Mass, MIT Press.
- Stengers, I 1997, *Power and Invention: Situating Science*. Minneapolis, University of Minnesota Press.
- Thompson, RC 1989, *Life-span effects of radiation in the beagle dog*. U.S., Dept. of energy, health and environmental research, Pacific Northwest Laboratory.
- Tomkins, LM Thomson, PC & McGreevy, PD 2011, Behavioral and physiological predictors of guide dog success. *Journal of Veterinary Behavior*, vol. 6(3), pp. 178–187.
- van Dooren, T 2014, *Flight Ways*. New York, University of Columbia Press.
- Willett, C 2014, *Interspecies Ethics*. New York, University of Columbia Press.
- Whatmore, S 2006, 'Materialist returns: Practising cultural geography in and for a more-than-human world'. *Cultural Geographies*, vol. 13(4), pp. 600-609.
- Zinn, RD 1968, 'The research dog', *Journal of the American Veterinary Medical Association*, 153(12), pp. 1883–6.

Giraud E and Hollin GJS (2016) 'Laboratory Beagles and Affective Co-productions of Knowledge'. In: M Bastian, O Jones, N Moore and E Roe (eds), *More-than-Human Participatory Research*. New York and London: Routledge.