

Buller, H. (2015). "Animal geographies II Methods." *Progress in Human Geography* 39 (3) pp. 374-384. (published)

## Animal Geographies 2: Methods

*Henry Buller*

Without a living subject, there can be neither space nor time. (Von Uexkull, 2010: 52)

There would be, at bottom, only two types of discourse, two positions of knowledge, two grand forms of theoretical or philosophical treatise regarding the animal [...] In the first place there are the texts signed by people who have no doubt seen, observed, analysed, reflected on the animal but who have never been seen, seen by the animal. [...] They have taken no account of the fact that what they call "animal" could look at them, and address them from down there, from a wholly other origin. As for the other category of discourse, found amongst those signatories who are first and foremost poets and or prophets [...] those men and women who admit to taking it upon themselves the address that an animal addresses to them. (Derrida, 2008: 13-14).

Words are a fucking nightmare when it comes to closeness. (Stephanie LaFarge, 2011, early keeper of the chimpanzee 'Nim', describing her experience with Nim in the film *Project Nim*)

### Introduction

In the recent film *Blackfish*, the actress Whoopi Goldberg is shown commenting on the 2010 death of SeaWorld's Orca trainer Dawn Brancheau, saying: 'These are wild animals and they are unpredictable because we don't speak whale, we don't speak tiger, we don't speak monkey'. This suggestion that if we could 'speak whale' (or speak dog or sheep) we could predict their behaviour unveils what are two central investigative challenges for the social sciences', and geography's, recent engagement with the 'animal': what can we know of animals, and what might we do with that knowing? In this second review, I look more specifically at some of the methodological approaches and innovations that geographers (and others) have employed to investigate the inter-actions and inter-relations of human and non-human animals.

Speaking to animals is the stuff of legend and literary fiction - from Greek and Vedic mythology to Dr Doolittle and Harry Potter – for speaking, in the sense that we define it, is held by many as the quintessentially unique and exclusive human quality; the *uber* signifier of an abyssal rupture which, for us at least, defines human and non-human animals as ontologically distinct. It is not so much that we do not speak whale but, on our terms, there is no 'whale' to speak; an anthropomorphic hubris that has long since been shown to be falsely premised. Of course, others have been here before. 'If the lion *could* talk ...', begins that notorious quotation of Wittgenstein (my emphasis). It is because non-human

animals do not 'speak' (and therefore are not ascribed thought, a theory of mind and so on) that they have long remained, fundamentally, nature's silent objects to human subjects, albeit living and possibly suffering 'objects' worthy, in some circumstances, of care and moral consideration<sup>1</sup>. Being '*dumb*' (not speaking, at least to us) and thereby '*dumb*' (lacking in subjective intelligence), animals, as an infamously collective noun, might appear to possess relevant yet generic material and locational properties but little else. What can geographers and social scientists know of the animal(s) beyond this?

From this primal ontology comes an epistemological purification that long ago gave up the animal to the natural sciences and their distinctive mechanistic and observational methods. Although Wemelsfelder (2012) characterizes these methods as a form of distancing, an objectivity that appears, quoting Nagel (1986) like a 'view from nowhere', it has nevertheless been the biologists and animal behaviourists who have sought in their way to render the wild animals less unpredictable, although rarely within such artificial and immediate environments as 'SeaWorld'. The anthropocentric and humanist social sciences, with their Durkheimian emphasis on social facts, social institutions, collective intentionality and individual reflexivity, coupled with, after Mead (1962), the thrust of symbolic interactionism, have traditionally placed language as a prerequisite basis for entry into the 'social'. As such, they retain what Murphy (1995: 689) calls the 'radical discontinuity' between human and non-human animals by maintaining that social relations are necessarily *human* relations (Ingold 1997; Peggs, 2012). To the extent to which non-human animals pervaded these facts, institutions and intentions, it has been essentially either as objects or representations within and defined by human social practice; rarely if ever as animals. 'Being an animal in modern societies', write Arluke and Sanders (1996:9), is 'less a matter of biology than it is an issue of human culture and consciousness'.

As many have argued, post-humanism, in which we have already wrapped much of the impetus for contemporary animal geography (Buller, 2013a), offers a re-assessment of both of the ontological and epistemological positions outlined above. But, for Taylor (2012), it is the methodological ramifications of this re-assessment that are under-explored yet nonetheless crucial. Methodologies have been the mechanism by which such ontological and epistemological divisions have, in the past, been maintained. Methods have ontological consequences; methods 'are political' (Taylor, 2012: 38).

Urbanik's (2012) recent introduction to the geography of human and animal relations begins with what is, in many ways, a conventional methodological review for thinking geographically about animals. Only at the end of the book does she concede that the most problematic future direction for animal geographies is 'developing the methodologies that will allow us to move closer to the animals themselves as individual, subjective beings' (2012:186). This is no great surprise. There is within much animal studies a persistent and entirely understandable emphasis on the human side of human-animal relations and to the human-directed methodologies (Franklin 2004) that elucidate it, whether it be with pet owners (Fox, 2006; Power, 2008), farmers (Bock and Van Huik, 2007) laboratory technicians (Shyan-Norwalt, 2009; Birke et al., 2007) and so on. Yet, as

---

<sup>1</sup> Jeremy Bentham famously argued that the moral question should not be whether animals talk but whether they suffer.

Hodgetts and Lorimer (2014) point out, this continued human focus runs to some extent counter to the discipline's more-than-human aspirations.

Herein then lies the radical triple challenge for animal geographers wishing to extend the reach of their scholarship to include and account for animal presences - for all the reasons discussed in the first of these review essays (Buller, 2013a). First, and perhaps rather obviously, a genuine methodology for animal geography must reach beyond the all-too-easy collective and abstract categorisations of the non-human (such as orderings by species, function or location, common to both natural and social science approaches to the animal) to focus rather upon animals as 'embodied individuals living their lives entangled with humans and their own wider environment' (Taylor, 2012: 40). Second, what is required are approaches to understanding animals that do not rely upon wholly human representative accounts ('the animal as it is seen': Derrida 2008: 82) but finds other ways of letting animals 'speak' ('the animal that sees': *ibid*). Third, there is a need to move away from the traditional (and, in the context of contemporary 'animal' studies, out-dated) separation of social and natural science to establish a set of concepts and methodologies that addresses what matters for both human and non-human animal subjects in their various relational combinations and spaces; achieving this would indeed be a 'radical transvaluation of the "reticence" of Wittgenstein's lion' (Wolfe 2003: 67), this being not the 'reticence of absence' but rather that of, as Hearne (1994:170) calls it, 'tremendous presence'

### **Messing with the 'social'**

The first step here, once we have acknowledged that our relations with non-human animals can possibly be of importance to human understanding (and perhaps recognized as constitutive of the actors, both human and non-human implicated in those relations) is to refashion the notions and assumptions of the 'social' and the 'social actor' through methodologies that are inclusive, troublesome, emergent and messy. Such methodologies have become highly significant in animal geography (Philo and Wilbert, 2000). Tracing 'actor network theory' (ANT) back to its original presentation in 1986 (Callon, 1986), Law (2012) writes: 'the result was a major STS scandal. Many were horrified that people and animals [...] could be understood in the same terms' (p.2). The relational approach championed by Latour, Callon, Law and others has had an immense influence on the theoretical and methodological development of animal geography since the start (Emel et al., 2002). ANT in particular, as a more-than-human ontology, has become widely used within the field, as a way of destabilizing established fixities and divisions (notably between culture and nature, human and non-human), of emphasizing relational practice and non-human agency (Sayes, 2014) and of revealing multiplicities (Davies, 1999; Whatmore and Thorne 1998; Jones, 2003; Bear and Eden, 2008; Law and Mol, 2008; Lulka, 2008; Rodger et al., 2009; Taylor and Carter, 2013; Taylor 2011; Nimmo, 2011). The animal - be it sheep (Law and Mol, 2008) or lobster (Johnson, 2010), octopus (Bear, 2011) or dinoflagellate (Shrader, 2010) - is not only re-defined as a component of the social (Latour 2007), but the very process of definition is fundamentally altered. As such, both human and animal actors become semiotic agents. 'If were asked what I could say of "the salmon" as an animal', argues Law (2012, p. 8), 'I would start by talking of tinkering, of fluidities, and of multiplicities. I would start by imagining the salmon - the farmed Atlantic salmon - as a non-

coherent assemblage that is none the less just that when it intersects with people: an assemblage’.

Critics of the use of ANT within animal geography point to its predominantly functionalist approach (Johnston, 2008) and emphasis on the socio-technological; (Whatmore and Thorne 2000:186), its problematic symmetry and human-relational imperative (Jones 2003; although see Solomon, 2013), as well as, for some, its seeming dismissal of the living qualities of animals (and humans) as distinctive to inanimate objects and machines (Risan, 2005; Ingold, 2011). In his review of Whatmore (2002), Philo (2005) remarks that the living animals in her work remain ‘shadowy presences’ despite the rich topological accounts of their agentic performances and disturbances within more-than-human networks. Reflecting perhaps its own epistemological trajectory and subsequent ‘diaspora’ (Law, 2009) away from the ethnographic intimacies of laboratory practice (Baicocchi et al., 2013), ANT has, so far within animal geography, had less to say about the uniquely ‘bestly spaces’ of non-humans beyond their immediate relational qualities *vis-à-vis* humans. Yet, recent investigations in animal geography are seeking to redress this lack (see below and, for example, Campbell, 2010; Hodgetts and Lorimer, 2014). Nevertheless, ANT and relationality, and their explicit theoretical and empirical challenge to human exceptionalism, pervade contemporary animal geography in multiple ways, as many animal geography texts make clear. One major contribution of ANT, if not always appreciated, has been to reinforce the importance of ethnographic investigative methods and sensibilities within animal geography.

### **Multi-species ethnography**

... if we look we will find the whole world folded into a field site or a practice. It is just a matter of paying attention, of going slow, of not assuming too much. Note in passing that this suggests that we need to attend to practices and not just to what people say they are doing. (Law , 2012: 4).

Recognising the limits of purely representational and often problematically anthropomorphized accounts of human-animal relations, animal geographers and others have turned to ethnographic means of accounting for animal presence and agency and, in doing so, have considerably extended the ethnographic repertoire. Anticipating the relational focus of later animal studies, the sociologists Arluke and Sanders (1997) were already suggesting that social scientists should frequent places of human-animal relations such as animal shelters, research labs or dog training schools, and there seek to ‘document what is happening in these unfamiliar places and to unearth the meanings than animals have for people’ (1997: 19). Yet, they ultimately went a lot further than that. Drawing on the work of animal trainers such as Hearne, ethologists such as Dawkins and primatologists such as Goodall, they proposed a new ethnographic endeavour based, first, upon the acceptance of mindful animal agency in human/animal relations and, second, upon empathetic and interpretive observation of the manner in which exchanges between human and non-humans are practised and performed as between ‘subjects-in-interaction’ having ‘shared biographies’.

Ethno-methodologies have since become widely used within animal geography and other related fields of social science: from Alger and Alger’s (1999) study of a

cat shelter to the avowedly 'non-experimental' filmic investigation by Laurier et al. (2006) of dog walking in a Swedish park; from Despret's (2010) ethno/ethology of the scientific engagement with dancing babblers in the field to Roe's 'experimental partnering' in a field of cows (Roe and Greenhough, 2014); from Barua's multi-sited ethnographic reanimation of elephant tales (2014) to Davies' (2013) emergent cartographies of monstrous laboratory mice. What these various observational and participatory 'ethno-' (Franklin et al., 2007), 'trans-species' (Kohn, 2007) and 'multispecies' (Kirksey and Helmreich, 2010) methodologies have in common is an attention, on the one hand, to the performance of routine practice and, on the other, to eventful and troubling interruptions. Here the human (be they salmon handlers: Law, 2012) and non-human (be they pink dolphins: Choy, 2011) alike become framed, enacted and constructed through multiple layers of inter-actional practice (Franklin et al., 2007; Lien and Law, 2011). In his innovative ethno-methodological use of the moving image to explore elephant biographies, Jamie Lorimer (2010) explores the use of video to witness the mobile practices that might escape more conventional ethnographic observation, alongside the techniques employed by film-makers to evoke affect in the portrayal of elephants. Moving image, he writes opens up 'thinking spaces for an affective micropolitics of curiosity in which we remain unsure as to what bodies and images might yet become' (Lorimer, J., 2010: 252).

Such methodological approaches to human-animal relations nevertheless demand that certain attentions are paid; attention to the animal behaviours and performances that are not always apparent as such (Franklin et al., 2007; Birke and Hockenhull, 2012; Lorimer, J., 2010); attention to human-animal relational tropes that reveal the impact of histories of past interactions (Lorimer, 2006; Segerdahl, 2012); attention, as observers, to our own scientific, empirical and disciplinary constructions (Haraway, 1989); and, finally, attention to the very questions that we ask (Despret, 2005).

### **Bodies, movement, being, knowing**

*L'animal est bien une autre existence.* (Merleau-Ponty, 1997, 137)

In seeking to account for the agency of non-humans, geographers Whatmore and Thorne (2000) distinguish between the technics, competencies and effects of actant-networks and what they describe as the 'more visceral approaches' to the 'corporeal configurations of energies and elements particularized in the experiential fabric of diverse living beings' (p.186). To put it another way, we may not share language with non-humans but we do share embodied life and movement and, in doing so, different – yet both biologically and socially related – ways of inhabiting the world (Buller, 2012a). From this starting point, drawing upon non-representational and phenomenological approaches to a more-than-singular existence, (a 'lively commonwealth': Lorimer, H., 2010: 57), human geography and other cognate disciplines have begun, inventively and experimentally, to explore what Barad (2003: 829) refers to as 'practices of knowing' that 'cannot be fully claimed as human practices'; 'we know', she argues, 'because "we" are of the world' (emphasis in original). Although animals, claims Thrift (2005), might exist in radically different space/time configurations to our own (or to other animals), a project of 'comparative ontogenesis' is needed to

investigate how different worlds – and thus multiple ‘intelligencings’ (as the properties of an organism *and* its environment) – come into being and interact with each other (2005: 469); not an easy task methodologically (Braun, 2008). Hayden Lorimer’s work, first on reindeer herds and herders (2006) and second on seals (2010), draws in ethology, historical archives, observation, walking, running and, in the latter paper, the occasional ‘exchange of looks’ with a protective seal mother, to produce ‘entwined biographies of human and animal subjects’ (Braun, 2008: 674). This is, in Lorimer’s words: ‘learning by witnessing’ (2010: 72):

If the phenomenological experiment of encounter is pushed far enough, a portrait of shared existence emerges encompassing more-than-human lives and habits, repeatedly emerging into the world. (Lorimer, H., 2010: 73)

At what is perhaps a more intimate level, a further methodological prompt for much animal geography has been Haraway’s (2008) call for ‘positive knowledge’ of animal companions. Inspired by the work of people like Goode (2007) and Sanders (1999) and, most obviously, Haraway’s writings on companion species (2003, 2008), social science animal scholars have sought, through exploring and documenting of shared and embodied encounters with animals, to reveal a practical relationality of being and acting together (Lulka, 2004; Jerolmak, 2009; Johnston, 2008; Lorimer, H., 2010; Greenhough and Roe, 2011; Buller, 2012b). For Burke et al. (2004: 174), this amounts to ‘understanding how both human and animal are engaged in mutual decision-making, to create a kind of choreography, a co-creation of behaviour’. They go on: ‘What is clear from these new writings is an emphasis on co-creation, a kind of mutual becoming’ (ibid).

Thompson (2011) evokes the ‘liminal duality’ (after Turner, 1974) of the ‘centaur metaphor’ to examine the ‘mutual attunement’ of horse and rider through a series of comparative horse-riding ethnographies that emphasize isopraxic intercorporeal and inter-species communication. Similarly, Nosworthy (2013) uses a ‘performance ethnography’ to develop a subtle reading not only of the somatic interchange between horse and rider, but also of the generative emotional and affective registers that pass between and are shared by them. Haraway’s notes from the contact zones of ‘Dogland’ (2008) demonstrate, perhaps once and for all, that there are more flourishing, generous, wordly and revealing shared languages in these moments of fleshy inter-species interaction beyond calculation than the chasm of linguistic difference with which we started this piece would ever allow. Nothing, then, could be more ironic than the fact that dog-human companionship has been the model for the development of companion robots (Lakatos and Miklosi 2012).

Certainly, human-animal relations and intersections with livestock present an instrumental, abrupt and unsymmetrical finitude. Nevertheless, for a growing number of animal geographers and other social scientists (Buller, 2012b, 2013a; Roe and Greenhough, 2014; Porcher and Lecrivain, 2012; Johnston, 2013; Holloway and Morris, 2014, for farm animals; and Bear and Eden, 2011, and Bull, 2011, for fish), they offer distinctively visceral, performative and affective opportunities for exploring co-presence and mutual becoming. Many such studies incorporate the intermediating role of technological and scientific *dispositifs* in the nature-techno-culture assemblies that characterize the modern farm (for example, Holloway et al., 2013; Holloway and Morris, 2012; Higgin et al., 2011; Law and Lien, 2011). Others (for example, Jones, 2014) consider how the

'affective/emotional registers' that emerge from human/animal encounters are key constituents of rurality and the rural landscape.

Much of this work, it is true, involves relations with animals to which we, as humans, are already close and 'friendly with', most notably – though not exclusively - dogs and horses. A wider bestiary, as Ginn (2013) argues, lies largely outside both such relations and such tight relational methodologies, revealing rather more, in his words, an 'ontology of detachment' (p.10). Recent attempts to develop methodological means to explore more hidden animal worlds and our often very limited or obscured interactions with them include Ginn's (2013) own work on garden slugs, Moore and Kosut's (2013) consideration of urban bees, framed within a proposed 'intra-species mindfulness', Beisel et al.'s (2013) special issue of the journal *Science as Culture* and, at the more microscopic scale, Greenhough's (2012) recent study of the common cold virus (2012).

### **... and the animal returns**

The key methodological endeavour of human-animal relational studies has been to come to some emergent knowing of non-humans: their meaning (both materially and semiotically); their 'impact' on, or even co-production of, our own practices and spaces; and our practical and ethical interaction with and/or relationship to them – or at least to find creative ways to work around unknowing. Whether or not that knowing is, at heart, a human autobiographical project, with it comes a voice and, with a voice, the possibility of mattering. But what matters to them? Derrida (2008: 48) argues that, rather than 'giving speech back' to animals, we might accede 'to a thinking, however fabulous and chimerical it might be, that thinks the absence of a name and the word otherwise, as something other than a privation'; a thinking that, for Lulka (2014: 55), recognizes 'a basic quality of latitude' in animals. Echoing Thrift's (2005: 474) call for a 'transcendental empiricism', in this final section I want to argue for further attention to be paid to the methodologies and approaches that suggest or reveal what matters, or what might matter, to animals as subjective selves and suggest that a greater engagement between human-animal scholars and the biological and animal sciences is now required.

Animals are, of course, geographers too. Recent research by a group of biologists in Bordeaux (Normand et al., 2009; Normand and Boesch, 2009) investigates the spatial memory of forest chimpanzees, demonstrating their ability to combine and select between 'Euclidian' and topographical mapping techniques. Drawing attention to the possible existence of both egocentric and exocentric representations of space working together, the authors open the way to an intriguing ecology of trans-species practice. Hodgetts and Lorimer (2014), in a recent and exciting review, bring this possibility closer to home. In their charting of a number of novel biogeographical mapping methodologies, informed in turn by ethology, inter-species communication techniques and genomics, they offer, in exhorting greater inter-disciplinary collaboration, the opportunity for animal geographers and others to 'take animals seriously as subjects and as ecological agents' (2014: 10).

Some might see it as ironic, but many of the more significant advances in

understanding what ‘matters to animals’ have come from the sciences of ethology and animal welfare in the context of various forms of confinement, from shelters and zoos to farms and laboratories (Wemelsfelder, 1997; Duncan, 2004; Waiblinger et al., 2006; Boivin et al., 2012). Accepting welfare not as ‘the human perception of the animal state’ but rather as the ‘animal’s own perception of its environment’ (Boivin et al., 2003: 12, cited in Despret, 2010; see also Whay et al., 2003), welfare scientists are increasingly shifting their attention from an emphasis on ‘coping’ to one of identifying and facilitating positive psychological and physiological states (Bock and Buller, 2013) where ‘welfare’ is assessed from the point of the view of the animal rather than in terms solely of human obligation (Appleby et al. 2004; Buller, 2013b). The results may sometimes be counter-intuitive to anthropomorphized assumptions of animal behavior in confined systems, suggesting once again that ‘speaking for animals’ can be problematic even within a post-humanist ethical agenda. ‘Words can become the enemy’, as Nim’s early keeper pointed out (Lafarge, 2011). Not that this should deter us. Borrowing Haraway’s (2010) wonderful phrase, the methodological complexes of animal geographies and their needed challenge to human exceptionalism surely invite us to ‘stay with the trouble’.

The horse started a little, when he came near me, but soon recovering himself, looked full in my face with manifest tokens of wonder; he viewed my hands and feet, walking round me several times. I would have pursued my journey, but he placed himself directly in the way, yet looking with a very mild aspect, never offering the least violence. We stood gazing at each other for some time; at last I took the boldness to reach my hand towards his neck with a design to stroke it, using the common style and whistle of jockeys, when they are going to handle a strange horse. But this animal seemed to receive my civilities with disdain, shook his head, and bent his brows, softly raising up his right forefoot to remove my hand. Then he neighed three or four times, but in so different a cadence, that I almost began to think he was speaking to himself, in some language of his own. (Swift, 2003: 276)

### **Acknowledgements**

The author would like to thanks Chris Philo for his marmoset-like (*Callithrix jacchus*) patience.

### **References**

- Alger, J.M. and Alger, S.F. 1999: Cat culture, human culture: An ethnographic study of a cat shelter. *Society and Animals* 7, 199-218.
- Appleby, M. C., Mench, J.A. and Hughes, B.O. 2004: *Poultry Behaviour and Welfare*. Cambridge MA: CABI Publishing.



- Arluke, A., and Sanders, C. R. 1996: *Regarding animals*. Philadelphia: Temple University Press.
- Barad, K. 2003: Posthumanist performativity: towards an understanding of how matter comes to matter. *Signes: Journal of Women in Culture and Society* 28 (3) 801-831.
- Barua, M. 2013: Circulating elephants: unpacking the geographies of a cosmopolitan animal. *Transactions of the Institute of British Geographers*. Published online at <http://onlinelibrary.wiley.com/doi/10.1111/tran.12047/abstract>
- Bear, C. and Eden, S. 2008: Making space for fish: the regional, network and fluid spaces of fisheries certification. *Social and Cultural Geography* 9, 487-504.
- Bear, C. 2011: Being Angelica: exploring post-species animal geographies. *Area* 43 (3), 297-304.
- Bear, C. and Eden, S. 2011: Thinking like a fish? Engaging with nonhuman difference through recreational angling. *Environment and Planning D: Society and Space* 29 (2), pp. 336-352.
- Beisel, U., Kelly, A.H, and Tousignant, N. 2013: Knowing insects : hosts, vectors and companions of science. *Science as Culture* 22 (1), 1-15.
- Birke, L. and Hockenhull, J.S. 2012: Crossing Borders. In Birke, L. and Hockenhull, J. editors, *Crossing Boundaries Investigating Human-Animal Relationships*. Leiden: Brill, 251-256.
- Birke, L., Arluke, A. and Michael, M. 2007: *The Sacrifice: how scientific experiments transform animals and people*. West Lafayette: Purdue University Press.
- Bock, B. and Buller, H. 2013: Healthy, Happy and Humane: Evidence in Farm Animal Welfare Policy. *Sociologia Ruralis* 53, 390–411
- Bock, B. B. and Van Huik, M.M. 2007: Animal welfare, attitudes and behaviour of pig farmers across Europe. *British Food Journal* 109 (11), 931-944
- Boivin X., Bensoussan, S., L'hotellier N., Bignon L., Brives H, Brulé A., Godet J., Grannec, M.L, Hausberger M., Kling-Eveillard F., Tallet, C., Courboulay , V. 2012: Humans and livestock animals at work: toward a multidisciplinary approach of relational practices. *Productions Animales* 25 (2) , 159-168.
- Boivin, X. 2003: The human-animal relationship, stockmanship and extensive sheep production". In Goddard, P. editor, *Improving sheep welfare on extensively managed flocks: economics, husbandry and welfare*. Proceedings of a workshop held in Aberdeen, Scotland, Scottish Agricultural College, 11-19.
- Braun, B. 2008: Environmental Issues: Invented Life. *Progress in Human Geography* 32 (5), 667-679.

- Bull J. 2011: Encountering fish, flows, and waterscapes through angling. *Environment and Planning A* 43 (10), 2267 – 2284.
- Buller, H. 2012a: One slash of light then gone: animals as movement. *Etudes Rurales* 189, 139-154.
- Buller, H. 2012b: Nourishing communities: animal vitalities and food quality. In Birke, L and Hockenhull, J.S. editors, *Crossing Boundaries: Investigating Human-Animal Relationships*. Leiden: Brill, 51-72
- Buller, H. 2013a: Animal Geographies I. *Progress in Human Geography*. Published online first at: <http://phg.sagepub.com/content/early/2013/03/21/0309132513479295>
- Buller, H. 2013b: Individuation, the Mass and Farm Animals. *Theory, Culture and Society* 30, 155-175.
- Burke, L., Bryld, M. and Lykke, N. 2004: Animal performances. *Feminist Theory* 5 (2), 167-183.
- Callon, M. 1986: Some elements of a sociology of translation: Domestication of the scallops and the fishermen of Saint Brieuc Bay. In Law, J., editor, *Power, action and belief: A new sociology of knowledge?*, Boston: Routledge, 196-233.
- Campbell, M. 2010: An Animal Geography of Avian Foraging Competition on the Sussex Coast of England. *Journal of Coastal Research*, 26 (1), 44 – 52.
- Choy, T. 2011: *Ecologies Of Comparison: An Ethnography Of Endangerment In Hong Kong*, Durham: Duke University Press Books.
- Davies, G. 1999: Exploiting the archive: and the animals came in two by two, CD-ROM and BetaSp. *Area* 31 (1), 49-58.
- Davies, G. 2013: Mobilizing Experimental Life: Spaces of Becoming with Mutant Mice. *Theory, Culture and Society* 30, 129-153.
- Derrida, J. 2008: *The Animal Therefore that I am*. New York: Fordham University Press.
- Despret, V. 2005: Sheep Do Have Opinions. In Latour, B. and Weibel, P. editors, *Making Things Public: Atmospheres of Democracy*, Cambridge, Mass: MIT Press, 360-370.
- Despret, V. 2010: *Ethology between Empathy, Standpoint and Perspectivism: the case of the Arabian babblers*. Available at: <http://www.vincianedespret.be/2010/04/ethology-between-empathy-standpoint-and-perspectivism-the-case-of-the-arabian-babblers/#more-30> (Accessed 3<sup>rd</sup> October 2013)
- Duncan, I.J.H. 2006: The changing concept of animal sentience. *Applied Animal Behaviour Science* 100, 11-19.

- Duncan, I. J. H. 2004: A Concept of Welfare Based on Feelings. In Benson, G.J. and B. E. Rollin editors, *The Well-Being of Farm Animals. Challenges and Solutions*. Oxford: Blackwell, 85–101.
- Emel, J., Wilbert, C. and Wolch, J. 2002: Animal Geographies. *Society and Animals* 10, 407-412.
- Fox, R. 2006: Animal behaviours, post-human lives: everyday negotiations of the animal–human divide in pet-keeping. *Social and Cultural Geography* 7 (4), 525-537.
- Franklin, A.S. 2004: Human-Nonhuman Animal Relationships in Australia: An Overview of Results from the First National Survey and Follow-up Case Studies 2000-2004. *Society and Animals* 15 (1), 7-27.
- Franklin, A., Emmison, M., Haraway, D and Travers, M.H. (2007) Investigating the therapeutic benefits of companion animals: Problems and challenges. *Qualitative Sociology Review* 3 (1), 42-58.
- Ginn, F. 2013: Sticky lives: slugs, detachment and more-than-human ethics in the garden. *Transactions of the Institute of British Geographers*, Early View Online at <http://onlinelibrary.wiley.com/doi/10.1111/tran.12043/abstract>
- Goode, D. 2007: *Playing with my dog Katie: an ethnomethodological study of dog-human interaction*. West Lafayette: Purdue University Press.
- Greenhough B. and 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* 29 (1), 47 – 66.
- Greenhough, B. 2012: Where species meet and mingle: Endemic human-virus relations, embodied communication and more-than-human agency at the Common Cold Unit 1946–1990. *Cultural Geographies* 19 (3) 281-301.
- Haraway, D. 2008: *When Species Meet*. Minneapolis: University of Minnesota Press.
- Haraway, D. 2003: *The Companion Species Manifesto*. Chicago: Prickly Pear Press.
- Haraway, D. 1989 *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. New York: Routledge.
- Haraway, D. 2010: Staying with the Trouble: Xenoecologies of Home for Companions in the Contested Zones. *Cultural Anthropology Online*. Available at: <http://www.culanth.org/fieldsights/289-staying-with-the-trouble-xenoecologies-of-home-for-companions-in-the-contested-zones>
- Hearne, V. 1994: *Animal Happiness*. New York: Harper Collins.
- Higgin, M., Evans, A, Miele, M. 2011: A good kill: socio-technical organisations of farm animal slaughter. In Carter, B. and N. Charles editors, *Human and*

- other animals: critical perspectives*. Basingstoke: Palgrave Macmillan, 173-194.
- Hodgetts, T. and Lorimer, J. 2014: Methodologies for animal's geographies: cultures, communication and genomics. Forthcoming in *Cultural Geography*.
- Holloway, L. and Morris, C. 2014: Viewing animal bodies: truths, practical aesthetics and ethical considerability in UK livestock breeding. *Social and Cultural Geography* 15 (1) 1-22.
- Holloway L and Morris C 2012: Contesting genetic knowledge-practices in livestock breeding: biopower, biosocial collectivities and heterogeneous resistances. *Environment and Planning D: Society and Space* 30, 60-77.
- Holloway, L., Bear, C. and Wilkinson, K. 2013: Re-capturing bovine life: Robot–cow relationships, freedom and control in dairy farming. *Journal of Rural Studies* 33 (1), 131-140.
- Ingold, T. 2011: *Being Alive*, London: Routledge.
- Ingold, T. 1997: Life beyond the edge of Nature? Or, the mirage of society. In Greenwood, J.D. editor, *The Mark of the Social: discovery or Invention*. Latham, Rowman and Littlefield, 231-252.
- Jerolmack, C. 2009: Primary Groups and Cosmopolitan Ties: The Rooftop Pigeon Flyers of New York. *Ethnography* 10 (2/3), 211-233.
- Jerolmack, C. 2008: How Pigeons Became Rats: The Cultural-Spatial Logic of Problem Animals. *Social Problems* 55 (2), 72-94.
- Johnson, C. 2008: Beyond the clearing. *Progress in Human Geography* 32 (5), 633-649.
- Johnson, E.R. 2010: Reinventing biological life, reinventing 'the human'. *Ephemera* 10 (2), 177-193.
- Johnston, C. L. 2013: Geography, Science, and Subjectivity: Farm Animal Welfare in the United States and Europe, *Geography Compass* 7 139-148
- Jones O., 2003: The Restraint of Beasts: rurality, animality, actor network theory and dwelling'. In Cloke, P. editor, *Country Visions*, London: Pearson Education, 450–487.
- Jones, O. 2013: Who Milks the Cows at Maesgwyn? The Animality of Rural Landscapes in Affective Registers. *Landscape Research Journal*, 38 (4), 421-442.
- Kirksey, S. and Helmreich, S. 2010: The emergence of multispecies ethnography. *Cultural Anthropology* 25 (4), 545-576.
- Kohn, E. 2007: How dogs dream. *American Ethnologist* 34 (1), 3-24.

- LaFarge 2011: early keeper of the chimpanzee 'Nim', describing her experience with Nim in the film 'Project Nim' (2011), directed by James Marsh.
- Lakatos, G and Miklosi, A 2012: How can the ethological study of dog-human companionship inform social robotics. In Birke, L. and Hockenhull, J. editors, *Crossing Boundaries: Investigating Human-Animal Relationships*. Leiden: Brill, 187-208.
- Latour, B. 2007: *Reassembling the Social*. Oxford: Oxford University Press
- Laurier, E., Maze, R. and Lundin, J. 2006: Putting the dog back in the park: animal and human mind-in-action. *Mind, Culture and Activity* 13 (1), 2-14.
- Law, J. 2012: Notes on Fish, Ponds and Theory. *Norsk antropologisk tidsskrift* 23 (3-4), 225-236.
- Law, J. and Mol, A. 2008: The actor-enacted: Cumbrian sheep in 2001. In Malafouris, L. and Carl Knappett, C, editors, *Material Agency: Towards a Non-Anthropocentric Approach*, Dusseldorf: Springer, 57-77.
- Law, J and Lien, M. 2013: Animal Architectures<sup>1</sup>. In Harvey, P., Casella, E., Evans, G., Knox, H., McLean, C., Silva, C., Thoburn, N. and Woodward, K. editors, *Objects and Materials: a Routledge Companion*, Abingdon: Routledge, 329-337.
- Lien, M. and John Law 2011: Emergent Aliens: On Salmon, Nature and Their Enactment. *Ethnos* 76 (1), 65-87.
- Lorimer, J. 2010: Moving image methodologies for more-than-human geographies. *Cultural Geographies* 17 (2), 237-258
- Lorimer, H. 2006: Herding memories of humans and animals. *Environment and Planning D: Society and Space* 24, -518.
- Lorimer, H. 2010: Forces of nature, forms of life: calibrating ethology and phenomenology. In Anderson, B. and Harrison, P. editors, *Taking-Place: Non-Representational Theories and Geography* London: Ashgate, 55-78.
- Lulka, D. 2004: Stabilizing the herd: fixing the identity of nonhumans. *Environment and Planning D: Society and Space* (22), 439- 463
- Lulka, D. 2008: Non-linear diffusion: bison on the hoof and on the rail in the United States. *Geoforum* 39, 1007-1020.
- Lulka, D. 2014: Animals, daguerreotypes and movement: The despair of fading and the emergence of ontology. *Journal of Material Culture* 19 (1), 35-58.
- Mead, G.H. 1962: *Mind, Self and Society*. Chicago. Chicago University Press
- Merleau-Ponty, M. 1977: *La structure du comportement*. Paris, PUF
- Moore, L. J. and Kosut, M. 2013: Among the colony: ethnographic fieldwork, urban bees and intra-species mindfulness. *Ethnography* (published online

on 27<sup>th</sup> September 2013 and available at  
:http://eth.sagepub.com/content/early/2013/09/25/1466138113505022.a  
bstract?rss=1

Murphy , R. 1995: Sociology as If Nature Did Not Matter: An Ecological Critique.  
*The British Journal of Sociology* 46, (4), 688-707.

Nagel , T. 1986: *The View from Nowhere*. Oxford, Oxford University Press.

Nimmo, R. 2011: Actor Network Theory and methodology: social research in a  
more-than-human world. *Methodological Innovations Online* 6 (3), 108-119.

Noe, E. and Alroe, H. 2006: Combining Luhmann and actor-network theory to see  
farm enterprises as self-organizing systems. *Cybernetics and Human  
Knowing*, 13 (1), 34-48.

Normand, E. and Boesch, C. 2009: Sophisticated Euclidean maps in forest  
chimpanzees. *Animal Behaviour* 77, 1195-1201.

Normand, E., Dagui Ban, S. and Boesch, C. 2009: Forest chimpanzees (*Pan  
troglodytes verus*) remember the location of numerous fruit trees. *Animal  
Cognition* 12, 797-807.

Nosworthy, C. 2013: *A Geography of Horse Riding. The Spacing of Affect, Emotion  
and (Dis)ability Identity through Horse-Human Encounters*. Newcastle:  
Cambridge Scholars Publishing.

Peggs, K. 2012: *Animals and sociology*. London: Palgrave.

Philo, C. 2005: Spacing lives and lively spaces: partial remarks on Sarah  
Whatmore's Hybrid Geographies. *Antipode*, 37 (4), 824-833

Philo, C. and Wilbert, C. 2000: *Animal Spaces, Beastly Places*. London: Routledge

Porcher J. and Lécrivain E., 2012: Bergers, chiens, brebis : un collectif de travail  
naturel? *Etudes Rurales* 189, 121-138

Power, E. 2008: Furry families: making a human–dog family through home. *Social  
and Cultural Geography*. 9 (5), 535-555.

Risan L.C. 2005: The boundary of animality. *Environment and Planning D: Society  
and Space* 23 (5), 787 – 793

Rodger, K., Moore, S. and Newsome, D. 2009: Wildlife tourism, science and actor  
network theory. *Annals of Tourism Research* 36 (4), 645-666

Roe, E. and Greenhough, B. 2014: Experimental partnering: interpreting  
improvisatory habits in the research field. *International Journal of Social  
Research Methodology* 17 (1) Available online at:  
<http://www.tandfonline.com/doi/abs/10.1080/13645579.2014.854014#.UvdQC0BSZ5g>

Sanders, C.R. 1999: *Understanding Dogs: Living and Working with Canine*

- Companions*. Philadelphia: Temple University Press.
- Sandis, C. 2012: Understanding the lion for real. In Marques, A. and Venturinha, N. editors, *Knowledge, Language and Mind. Wittgenstein's Thought in Progress*. Berlin: De Gruyter, 138-160.
- Sayes, E. 2014: Actor-Network Theory and methodology: just what does it mean to say nonhumans have agency? *Social Studies of Science* 44 (1), 134-149.
- Segerdahl, P. 2012: Human-encultured apes: towards a new synthesis of philosophy and comparative psychology. In Birke, L. and Hockenhull, J. editors, *Crossing Boundaries: Investigating Human-Animal Relationships*. Leiden, Brill, 139-162
- Shrader, A. 2010: Responding to *Pfiesteria piscidia* (the Fish Killer): Phantomatic ontologies, Indeterminacy and responsibility in toxic microbiology. *Social Studies of Science* 40 (2), 275-306.
- Shyan-Norwalt, M.R. 2009: The human-animal bond with laboratory animals. *Lab Animal* 38(4), 132-6
- Solomon, O. 2013: Doing, being and becoming: the sociality of children with autism in activities with therapy dogs and other people. In Long, N.K. and Moore, H.L. editors, *Sociality: New Directions*. New York: Berghahn Books, 157-175
- Swift, J. 2003: *Gulliver's Travels*. Harmondsworth Penguin.
- Taylor, N. 2012: Animals, Mess and Method: Post-humanism, Sociology and Animal Studies. In Birke, L. and Hockenhull, J. editors, *Crossing Boundaries: Investigating Human-Animal Relationships*. Leiden: Brill, 37-50
- Taylor C. S. and Carter J. 2013: The agency of dolphins towards interspecies embassies as sites of engagement with significant otherness. *Geographical Research* 51 (1), 1-10.
- Taylor, N. 2011: Can sociology contribute to the emancipation of animals? In Taylor, N. and Signal, N editors, *Theorizing Animals: Re-thinking Humanimal Relations*. Leiden: Brill, 203-220.
- Thompson, K. 2011: Theorising Rider-Horse Relations: An ethnographic illustration of the centaur metaphor in the Spanish bullfight. In Taylor, N. and Signal, T. editors, *Theorising Animals: Re-thinking Humanimal Relations* Leiden: Brill, 221-254.
- Thrift, N. 2005: From born to made: technology, biology and space. *Transactions of the Institute of British Geographers* NS30, 463-476.
- Turner, V. 1974: *Dramas, fields and metaphors: symbolic action in human society*. New York, Cornell University Press.
- Urbanik, J. 2012: *Placing Animals: An introduction to the Geography of Human Animal Relations*. Lanham. Rowman and Littlefield.

- Von Uexkull, J. 2010: *A foray into the worlds of animals and humans*. Minneapolis: University of Minnesota Press.
- Waiblinger, S., Boivin, X., Pedersen, V., Tosi, M., Janczak, A., Visser, E. and Jones, R. 2006: Assessing the human– animal relationship in farmed species: A critical review. *Applied Animal Behaviour Science* 101, 185–242.
- Wemelsfelder, F. 2012: A science of friendly pigs. Carving out a conceptual space for addressing animals as sentient beings. In Birke, L. and Hockenhull, J. editors, *Crossing Boundaries: Investigating Human-Animal Relationships*. Leiden: Brill, 223-250.
- Wemelsfelder, F. 1997: The scientific validity of subjective concepts in models of animal welfare. *Applied Animal Behaviour Science* 53 (1), 75-88.
- Whatmore, S. and Thorne, L. 2000: Elephants on the move: spatial formations of wildlife exchange. *Environment and Planning D: Society and Space* 18, 185-203.
- Whatmore S, and Thorne L, 1998, Wild(er)ness: reconfiguring geographies of wildlife. *Transactions of the Institute of British Geographers* 23 (4), 435- 454
- Whay, H. R., Main, D. C., Green, L.E. and Webster, A.J. 2003: An animal-based welfare assessment of group-housed calves on UK dairy farms *Animal Welfare* 12 (4), 611-618.
- Wolfe C. 2003: *Animal Rites*. Chicago: University of Chicago Press.