

Animal geographies: studying the “more-than-human” in and through human geography

Summer 2008

Discussion of the course:

Dismantling the dualism between nature and culture has been a central preoccupation of many academic disciplines over the last three decades. Since the 1990s, part of this project has come to involve broadening the range of actors involved in the production of everything from the economy to bioengineering to ideas of nature and identity to include nonhuman agents as well as human ones. This course explores what this so-called “posthuman” shift has meant within the broad discipline of human geography, particularly with respect to how the emerging sub-discipline of animal geographies is intersecting with work in and ideas from environmental, economic and political geographies.

The course seeks to work through 1) why it is important to account for nonhuman actors in the study of human geography; 2) how to account for nonhuman actors in the study of human geography; 3) examples of human geographers working with posthumanist frameworks and nonhuman agency; and 4) the implications of accounting for nonhuman actors for studies in human geography. Many of the readings are not by geographers; this is because much of the definitive work on posthumanism and nonhuman actors has come from outside of the discipline. However, many of these “non-geographers” employ what is essentially geographical analysis and their work has subsequently been picked up by and integrated into human geography in exciting ways.

I. CONTEXT

1. Nature and human geography

Harvey, D. 1996. *Justice, nature and the geography of difference*. Malden: Blackwell.

2. Actor network theory

Latour, B. 1993. *We have never been modern*. Cambridge: Harvard University Press.

3. Posthumanism/“more-than-human” geographies

Castree, N., C. Nash, organisers. 2004. Mapping posthumanism: an exchange (contributors: N. Badmington, B. Braun, J. Murdoch and S. Whatmore). *Environment and Planning A* 36 (4): 1341-1363.

Derrida, J. 2003. And say the animal responded? In *Zoontologies: The Question of the Animal*, edited by C. Wolfe, 121-146. Minneapolis: University of Minnesota Press.

Braun, B. 2005. Environmental issues: writing a more-than-human urban geography. *Progress in Human Geography* 29 (5): 635-650.

Braun, B. 2004. Querying posthumanisms. *Geoforum* 35 (2): 269-273.

Agamben, G. 2004. *The open: man and animal*, translated by K Attell. Stanford: Stanford University Press.

Barad, K. 2003. Posthumanist performativity: toward an understanding of how matter comes to matter. *Signs: Journal of Women in Culture and Society* 28 (3): 801-831.

Wolfe, C. 2003. Introduction, Chapter one and Conclusion of *Animal rites: American culture, the discourse of species, and posthumanist theory*. Chicago: University of Chicago Press.

Whatmore, S. 2006. Materialist returns: practising cultural geography in and for a more-than-human world. *Cultural geographies* 13 (4): 600-609.

Franklin, A. 2006. Burning cities: a posthumanist account of Australians and eucalypts. *Environment and Planning D: Society and Space* 24 (4): 555-576.

4. Hybrid geographies

Whatmore, S. 2004. *Hybrid geographies: natures cultures spaces*. London: Sage.

Castree, N., organiser. 2005. Review symposium: Sarah Whatmore *Hybrid Geographies*. *Antipode* 37 (4): 818-845.

Badmington, N. 2004. Book review: *Hybrid Geographies*. *Cultural Geography* 11 (2): 230-231.

5. Introduction to animal geographies

Emel, J., C. Wilbert and J. Wolch. 2002. Animal geographies. *Society & Animals* 10 (4): 407-412.

Emel, J. and J. Wolch. 1998. Witnessing the animal movement. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 1-24. London: Verso.

Philo, C. and C. Wilbert. 2002. Animal spaces and beastly places: an introduction. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 1-34. London: Routledge.

Hobson, K. 2007. Political animals? On animals as subjects in an enlarged political geography. *Political Geography* 26 (3): 250-267.

II. SHARING SPACES: HUM/ANIMAL TERRITORIES

6. Caged “homes”

Anderson, K. 1995. Culture and nature at the Adelaide Zoo: at the frontiers of 'Human' Geography. *Transactions of the Institute of British Geographers* 20 (3): 275-294.

Anderson, K. 1998. Animals, science and spectacle in the city. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 27-50. London: Verso.

Berger, J. 1980. Why look at animals? In *About looking*. New York: Pantheon.

Davies, G. 1998. Virtual animals in electronic zoos: the changing geographies of animal capture and display. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 243-267. London: Routledge.

Davies, G. 1999. Exploiting the archive: and the animals came in two by two, CD-ROM and BetaSp. *Area* 31 (1): 49-58.

Ritvo, H. 2004. Animal planet. *Environmental History* 9 (2): 204-220.

Tuan, Y.F. 2007 [1984]. Animal pets: cruelty and affection. In *The animals reader: the essential classic and contemporary writings*, edited by L. Kalof and A. Fitzgerald, 141-153. Oxford: Berg.

7. Hunting grounds

Emel, J. 1998. Are you man enough, big and bad enough? Wold eradication in the US. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 91-116. London: Verso.

Lorimer, H. 2000. Guns, Game and the Grandee: The Cultural Politics of Deerstalking in the Scottish Highlands. *Cultural Geographies* 7 (4): 403-431.

Marvin, G. 2006. Wild killing: contesting the animal in hunting. In *Killing animals*, edited by The Animal Studies Group,¹ 10-29. Urbana: University of Illinois Press.

Wilbert, C. 2006. What is doing the killing? Animal attacks, man-eaters and shifting boundaries and flows of human-animal relations. In *Killing animals*, edited by The Animal Studies Group, 30-49. Urbana: University of Illinois Press.

¹ The Animal Studies Group consists of S. Baker, J. Burt, D. Donald, E. Fudge, G. Marvin, R. McKay, C. Palmer, and C. Wilbert.

Woods, M. 2000. Fantastic Mr Fox? Representing animals in the hunting debate. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 182-202. London: Routledge.

8. Conserved “wilds”

Lulka, D. 2004. Stabilizing the herd: fixing the identity of nonhumans. *Environment and Planning D: Society and Space* 22 (3): 439-463.

Lorimer, J. 2007. Nonhuman charisma. *Environment and Planning D: Society and Space* 25 (3): 911-932.

Lorimer, J. 2008. Counting corncrakes: the affective science of the UK corncrake census. *Social studies of science* 38 (3): 377-405.

Michel, S. 1998. Golden eagles and the environmental politics of care. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 162-189. London: Verso.

Whatmore, S. and L. Thorne. 1998. Wild(er)ness: reconfiguring the geographies of wildlife. *Transactions of the Institute of British Geographers* 23 (4): 435–454.

Whatmore, S. and L. Thorne. 2000. Elephants on the move: spatial formations of wildlife exchange. *Environment and Planning D: Society and Space* 18 (2): 185-203.

9. Urban streets

Griffiths, H., I. Poulter and D. Sibley. 2000. Feral cats in the city. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 56-70. London: Routledge.

Hinchcliff, S., M. Kearnes, M. Degen and S. Whatmore. 2005. Urban wild things: a cosmopolitical experiment. *Environment and Planning D: Society and Space* 23 (2): 643-658.

Philo, C. 1998. Animals, geography and the city: notes on inclusions and exclusions. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 51-71. London: Verso.

Wolch, J. 1998. Zoopolis. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 119-138. London: Verso.

Wolch, J. 2002. Anima Urbis. *Progress in Human Geography* 26 (6): 721–742.

Wolch, J., A. Brownlow and U. Lassiter. 2000. Animal worlds of inner city Los Angeles. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 71-97. London: Routledge.

10. Dinner tables

F. Ufkes. 1998. Building a better pig: Fat profits in lean meat. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 241-257. London: Verso.

Boyd, W. 2003. Making meat: science, technology, and American poultry production. *Technology and Culture* 42: 631-664.

LeDuff, C. 2007. At a slaughterhouse, some things never die. In *Zoontologies: the question of the animal*, edited by C. Wolfe, 183-198. Minneapolis: University of Minnesota Press.

C. Adams. 1999. Part one of *The sexual politics of meat: a feminist-vegetarian critical theory*. New York: Continuum.

11. Technoscience

Evenden, M. 2004. Locating science, locating salmon: institutions, linkages, and spatial practices in early British Columbia fisheries science. *Environment and Planning D: Society and Space* 22 (3): 355-372.

Birke, L. 2007 [1994]. Into the laboratory. In *The animals reader: the essential classic and contemporary writings*, edited by L. Kalof and A. Fitzgerald, 323-335. Oxford: Berg.

Haraway, D. 2004. Cyborgs to companion species: reconfiguring kinship in technoscience. In *The Haraway reader*. London: Routledge.

Franklin, S. Dolly's body: gender, genetics and the new genetic capital. In *The animals reader: the essential classic and contemporary writings*, edited by L. Kalof and A. Fitzgerald, 349-361. Oxford: Berg.

Heise, U.K. 2007. From extinction to electronics: dead frogs, live dinosaurs and electric sheep. In *Zoontologies: the question of the animal*, edited by C. Wolfe, 59-82.

Ritvo, H. 1997. Introduction to *The platypus and the mermaid and other figments of the classifying imagination*, xii-xiv. Cambridge: Harvard University Press.

III. NONHUMANS, GENDER AND ETHICS

12. Reinventing gender and nature

Haraway, D. 1991. *Simians, cyborgs and women: the reinvention of nature*. New York: Routledge.

Plumwood, V. 1993. Introduction and conclusion to *Feminism and the mastery of nature*. London: Routledge.

13. Ethics, justice and rights

Dion, M. 2000. The Moral Status of Non-human Beings and Their Ecosystems. *Ethics, Place and Environment* 3 (2): 221–229.

Jones, O. 2000. (Un)ethical geographies of human–non-human relations: encounters, collectives and spaces. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 268-291. London: Routledge.

Lynn, W.S. 1998. Animals, ethics and geography. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 280-297. London: Verso.

Haraway, D. 2003. *Companion species manifesto: dogs, people, and significant otherness*. Chicago: Prickly Paradigm Press.

Haraway, D. 2008. Chapters 1, 3 and 9-12 in *When species meet*. Minneapolis: University of Minnesota Press.

hum/an/imal territories annotated bibliography

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1. Caged “homes”

i.

Anderson, K. 1995. Culture and nature at the Adelaide Zoo: at the frontiers of 'Human' Geography. *Transactions of the Institute of British Geographers* 20 (3): 275-294.

Zoos are profoundly cultural institutions, testament to the now widely recognised notion that “nature”, rather than unmediated thing “out there”, is socially constructed. Nature as constructed in a zoo is a space that serves as the “other” that is intricately bound up in constructions of human, but also more precisely scientific, metropolitan and colonial identities, all of which are underwritten by a sense of human distance from nature. Tracing the origins of both zoos and the modes of western thought by which they have been underpinned and legitimised, Anderson highlights the interconnectedness of racial, gendered, environmental and species oppression, arguing that the “master subjectivity” built into western science and philosophy is founded upon a “web of exclusions” and the privileging of a particular form of reason. At the zoo, over four loosely defined time periods, Anderson finds ample evidence of how this master subjectivity affords the justification for ordering and controlling other spheres of life (the feminine, the racialised slave, the animal). Zoos, she argues, are perhaps above all celebrations of this perceived human capacity for order and control. In her last section, Anderson demonstrates how the “conservation message” of contemporary zoo keeping remains paradoxically reliant on animal captivity and rationalist conceptions of the human/animal divide.

ii.

Berger, J. 1980. Why look at animals? In *About looking*. New York: Pantheon.

Animals were once central to human experience – to language and metaphor, art and paint, society and symbology. The “decisive theoretical break” between humans and animals that figures so deeply in the modern world was sparked by Descartes, argues Berger, who in dividing body and soul and bequeathing the body to mechanics, reduced animals to machines. In succeeding centuries, animals have been increasingly commodified, and the animal underpinnings of our human achievements erased. In homes, zoos, and photographs, animals

are now only the observed; the fact that they can observe us back has lost all significance. Here Berger is the most helpful, articulating how animals are made objects that are rendered absolutely marginal in and by confined spaces, and concluding that the ultimate consequence of this marginalisation is the extinguishment of the reciprocal look between animal and man.

iii.

Davies, G. 1998. Virtual animals in electronic zoos: the changing geographies of animal capture and display. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 243-267. London: Routledge.

The zoo is a historically and contemporarily critical institution within networks of natural history, and zoos have provided a visual display of both imperial reach and human power over nature. Davies compares the traditional zoo with a new form of animal display, to which she refers as the 'electronic zoo'. Both traditional and electronic zoos are, as Davies quotes Latour, "centres of calculation", wherein unknown, distant and "wild" things are brought into urban centres, where they are categorised, ordered and made known. (Interestingly, comparing this with Berger's article, zoos thus simultaneously centralise *and marginalise* animals.) Electronic zoos, argues Davies, may reinforce and even accelerate the 'apartheid' between human and animal kind, dispersing responsibility for animals' embodies forms and rendering animals fully visible and controllable. In electronic zoos, animals are stabilised; they can no longer behave in unpredictable ways; they are "committed to repeating endlessly one interpretation of their complex behaviour" (259).

iv.

Davies, G. 1999. Exploiting the archive: and the animals came in two by two, CD-ROM and BetaSp. *Area* 31 (1): 49-58.

A focus on natural history filmmaking distinguishes this article from the similar chapter in *Animal geographies*, summarised above. Here, Davies compares zoos and the BBC's Natural History Unit (NHU): they are both, again, "centres of calculations" and both focus almost exclusively on "charismatic megafauna"; on the other hand, zoos and film utilise different visual technologies and this matters in terms of who the audience is and how it experiences the displayed animals. Davies again draws on Actor Network Theory (ANT) (although this article features an enlarged discussion of ANT and how it informs her research; for example, she wants to focus on not only processes of translation but also of *purification*) in her historical and contemporary accounts of zoos and film. Most interesting and pertinent is the section of the article within which Davies reviews the developments in visual technologies that enabling a distancing in the relationship between filmmaking and zoos.

v.

Ritvo, H. 2004. Animal planet. *Environmental History* 9 (2): 204-220.

In a succinct overview of animals' changing place in environmental historical scholarship, Ritvo points to heightened interest in and acceptance of animal-focused study over the last couple of decades, attributing this trend primarily to a democratising tendency within historical work. In addition to hunting, a good portion of the article is dedicated to animal domestication, wherein Ritvo briefly traces animals' roles in agricultural, industrial and post-industrial societies. Two threads are deserving of mention: the connections between domestication and human disease, and the corporeal changes in animals as a result of

domestication. These focal points distinguish Ritvo's article from many others by nature of its emphasis on physicality.

vi.

Tuan, Y.F. 2007 [1984]. Animal pets: cruelty and affection. In *The animals reader: the essential classic and contemporary writings*, edited by L. Kalof and A. Fitzgerald, 141-153. Oxford: Berg.

Drawing on tales of goldfish and dogs, Tuan demonstrates the two primary (and violent) ways that "domestication means domination": forced and carefully orchestrated breeding alters shape, behaviour and size of animals to make them more aesthetically or behaviourally pleasing and controllable; and animals are castrated to prevent uncontrolled reproduction. Breeding has occurred in variety of macabre ways and has generally led to a deterioration of health and animal intelligence, as improved aesthetics is usually the outcome most sought after. Nearly all domesticated dogs were originally bred for hunting, and many of what are now considered frivolous dog styles – clipped poodles with ribbons in their hair, for example – are vestiges of measures taken to make dogs more effective hunting aids. Such histories and the harsh stories of animal breeding that go into "making the pet", Tuan laments, are repressed and forgotten. Tuan also traces the shifts in popular sentiment towards animals and pets, suggesting that the last century's rise in pet keeping and "animal sentimentality" might be rooted in rural to urban shifts and a modern society within which it is increasingly inappropriate to be affectionate.

2. Hunting grounds

i.

Emel, J. 1998. Are you man enough, big and bad enough? Wolf eradication in the US. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 91-116. London: Verso.

Cultural phenomena and economic factors interact with each other in a complex dialectic; it is with respect to this dialectic that Emel examines the cultivation and "tangled ideological roots" of the "alibis of aggression" (92) that underpinned the eradication of wolves in the US. Situating herself as a radical or "left-green" ecofeminist, Emel's polemical chapter unveils the interrelatedness of racism, sexism, animal abuse, and economic practices. The dramatic eradication of wolves, argues Emel, far outran its original economic objectives, suggesting a fundamental interplay between culture and economics. Drawing on stunning direct quotes from hunters past and present, she attends to the sexualised and deeply gendered aspects of hunting and the particular form of masculinity – tough, dominant, strong, brave and rational - performed in and through wolf hunting. Emel focuses in particular on parallels between the oppression of animals and women, and the eradication of wolves and American Indians. She concludes that "constructions of masculinity, cruelty, regimes of bureaucracy, commodity production, class relations, myth and superstition, all determined the wolf's demise" (113), supporting and mutually defending one another.

ii.

Lorimer, H. 2000. Guns, game and the grandee: the cultural politics of deerstalking in the Scottish Highlands. *Cultural Geographies* 7 (4): 403-431.

The field sport of deer-stalking, and the changing “cultures of nature” that accompany its practice, have been and continue to be deeply implicated in the maintenance of elite private ownership of Scotland. What has remained consistent through the various incarnations and defences of deerstalking in the Scottish Highlands – nation-building, masculine identity performance, landscape preservation – is a “motif of custodianship and tradition” commonly associated with modern sporting landownership, which continues “to be used as an effective means to retain hegemonic control of the land resource” (403). Although no nonhuman animals feature significantly in Lorimer’s account, he makes thorough and compelling links between historical and contemporary hunting practices and the defence of private property, masculinist displays, and elitism, making his article a useful counterpoint to the attention given to low income hunters and rural hunting, which largely assumes that elite hunting is a thing of the past.

iii.

Marvin, G. 2006. Wild killing: contesting the animal in hunting. In *Killing animals*, edited by The Animal Studies Group,¹ 10-29. Urbana: University of Illinois Press.

Through the lens of social anthropology, Marvin explores relationships between human and animal lives and deaths as they are enacted and expressed in contemporary North American and European sport hunting. Multiple features distinguish sport hunting from other myriad forms of “utilitarian” animal killing, argues Marvin: humans enter the “wild spaces” of animals, rather than bringing animals into orderly human space; hunting is emotional and personal rather than mechanical and depersonalised; and animals present a challenge to the hunter: the possibility that the animal will get away, will not die. Retaining a culture/nature division, Marvin suggests that human hunting, unlike animal predation, is not a natural but rather a cultural pursuit; humans are driven to hunt not by inherent biological instinct but by complex cultural and technological practices.

iv.

Wilbert, C. 2006. What is doing the killing? Animal attacks, man-eaters and shifting boundaries and flows of human-animal relations. In *Killing animals*, edited by The Animal Studies Group, 30-49. Urbana: University of Illinois Press.

In pointed contrast to Marvin’s article (above), Wilbert takes as his theoretical buttress that things are always mixed, always “intra-acting” (Barad’s term), and that culture and nature, rather than a priori distinctions, are categories produced through processes of ordering and purification (Latour). Wilbert asks two primary questions: what is happening in and around reporting of animal attacks, and what do these stories reveal about people’s relationships to animals? His analysis of animal attacks points most resoundingly to a primary theme: the exclusive spatial and behavioural boundaries of humans/animals imagined by humans are constantly being transgressed. Quoting Plumwood, Wilbert states that animal attacks are one of the most compelling and jarring reminders of the fact that human mastery over nature is illusory: “we are part of nature” (43).

¹ The Animal Studies Group consists of S. Baker, J. Burt, D. Donald, E. Fudge, G. Marvin, R. McKay, C. Palmer, and C. Wilbert.

v.

Woods, M. 2000. Fantastic Mr Fox? Representing animals in the hunting debate. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 182-202. London: Routledge.

Because animals are barred from physical participation in formal political arenas, debates about hunting always involve animals' *representation*. Woods considers representation to be fundamentally a process of translation, wherein the subject being represented/translated cannot but take on a new form as the representative object. The object gains a physical and metaphorical mobility, transported via text, photograph or film; Latour refers to these as "immutable mobiles". Because subjects are separated from their representative objects, they can contest their representation. However, argues Woods, representation always silences those who are represented (also see Callon's 1986 article on scallops). Taking the case of fox hunting in Britain, Woods explores four superficially opposed "takes" on foxes. He reveals that all the "takes" are united by the manner with which they represent foxes and essentially reinforce foxes' real absence from political debate; foxes only ever exist as "ghostly representations". In the last three paragraphs of the article, Woods saves himself from due criticism from actor networks theorists, who would reprimand him for constructing too impermeable a divide between the subject of representation and its representative object. Woods acknowledges in this section the ways that foxes can spatially and metaphorically "disrupt" their representation.

3. Conserved "wilds"

i.

Lulka, D. 2004. Stabilizing the herd: fixing the identity of nonhumans. *Environment and Planning D: Society and Space* 22 (3): 439-463.

In wildlife management, scientific representations of nonhumans are inadequate because they obscure species' diverse capacities and justify their physical removal from specific locations.² A focus on animal indeterminacy and the processes of animal *becoming* shift nonhuman ontology away from such rigid physical characterisations. Centred on the primacy of repetition and movement in the processes of nonhuman existence and becoming, Lulka employs Deleuzian theories of de/reterritorialisation, Body without Organs (BwO), and multiplicity to direct a balanced and prescient critique of contemporary wildlife science/management of bison herds in Yellowstone National Park. Management strategies are now almost exclusively focused on maintaining population numbers that are predetermined to be necessary for genetic diversity. Lulka suggests convincingly that this focus on genetic diversity in wildlife management and also sustainability on the whole frequently has the effect of consigning wildlife to passive and static states and endorsing human intervention that ultimately serves to reify hierarchical relationships between humans and nonhumans. In what is perhaps his most important point, Lulka demonstrates repeatedly how such a focus also diminishes the importance of movement and corporeal experience among nonhumans, effectively immobilising

² This is certainly the case in cougar science, whereby particular territories are deemed "normal" and others "unusual", and cougars are routinely removed from the latter territories or are even destroyed if they transgress the boundaries imposed on them by scientific classification. This can even be the case in the absence of any scientific study for the region in question, and scientific results from other localities are abstracted and superimposed onto the landscape.

nonhumans, locking them in place – in what Lulka calls “final destination”. This is a tremendously useful article, not only for its exploration of human/wildlife relationships but also for its application of theory to suggest concrete implications and new directions.

ii.

Lorimer, J. 2007. Nonhuman charisma. *Environment and Planning D: Society and Space* 25 (3): 911-932.

Lorimer disaggregates the underdefined and undertheorised notion of nonhuman charisma, “the distinguishing properties of a nonhuman entity or process that determine its perception by humans and its subsequent evaluation... [emerging] in relation to the parameters of different technologically enabled, but still corporeally constrained, human bodies” (915). He develops three loosely defined and overlapping facets of nonhuman charisma: ecological – essentially an organism’s detectability; aesthetic – an organism’s physical characteristics that trigger positive or negative affections among humans; and corporeal – the affections and emotions generated by practical interactions with organisms over prolonged periods of time. Lorimer approaches one manifestation of nonhuman agency in a manner that attends to corporeality and relationality without reducing nonhumans to the objects of natural science, and he also helpfully reviews several key terms – such as agency, affect, and hybridity – with respect to how they have been understood and applied in geography over the last two decades.

iii.

Lorimer, J. 2008. Counting corncrakes: the affective science of the UK corncrake census. *Social studies of science* 38 (3): 377-405.

Corncrakes are a rare migratory bird in Scotland. Lorimer follows the work of ornithologists and bird surveyors as they design and implement a national census for and count and monitor the corncrake. He brings together concepts and methodologies from geography, the sociology of science and the recent ethological turn in social theory to examine how the census is implemented in the field and explore the affective, embodied skills and emotions involved in counting corncrakes. Through the census, the corncrake’s observable behaviour is translated and codified into what is framed as a dynamic population; the birds are “given voice” through this representing assemblage. Lorimer concludes with general observations about the importance of understanding the field sciences as affective practices and draws attention to the centrality of embodied skill, emotion and an ethical sensibility in the generation of scientific representations. The article contains several excellent sources on social studies of field sciences.

iv.

Michel, S. 1998. Golden eagles and the environmental politics of care. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 162-189. London: Verso.

Suzanne Mitchel develops the notion of borderlands with respect to spaces of care that are, she argues, conventionally considered apolitical and affective: wildlife rehabilitation and educational outreach for golden eagles. Michel argues, in good company with other human geographers, that nature and culture are not separate, and that the spatial imaginary of a borderland is a useful way to capture the blurred boundaries between culture and nature, and also public and private.

v.

Whatmore, S. and L. Thorne. 1998. Wild(er)ness: reconfiguring the geographies of wildlife. *Transactions of the Institute of British Geographers* 23 (4): 435–454.

In this slightly more detailed precursor to Whatmore's wildlife section in *Hybrid geographies*, the authors dismiss both utopic conceptualisations of wilderness, which suggest that its pristine and ahistorical space lies outside of human spaces, and heterotopian conceptualisations of wilderness, which, while exposing the "dense and energetic infrastructure of wilderness management" (436), still reproduce an asymmetry between the observer and the observed. Whatmore and Thorne find wilderness on the inside, like heterotopians, but go beyond this to recognise corporeality and nonhuman agency in what they call "topologies of wildlife": "a relational achievement spun between people and animals, plants and soils, documents and devices" (437).³ Following the leopard and the broadnosed crocodile as guides, the authors narrate two historically remote cases – the gladiatorial games of Ancient Roman and contemporary zoological inventories of global conservation conventions, respectively – to emphasize how topologies of wildlife are performative, fluid and relational. Trying to write ecologically, the authors admit, is challenging: the 'pinched vocabularies' of science and economics do no justice to animals' corporeal, creative and social existences. Therein lies the impetus to challenge these vocabularies' moral authority to speak on behalf of animals. Begin, advise the authors, by treating the living creatures that become leopard and crocodile as if they matter.

vi.

Whatmore, S. and L. Thorne. 2000. Elephants on the move: spatial formations of wildlife exchange. *Environment and Planning D: Society and Space* 18 (2): 185-203.

Actant [Actor] Network Theory (ANT) and feminist science studies share a commitment to a relational understanding of social agency and to a broadening of what constitutes an actor in social constellations. ANT has been centrally focused on the socio-technologies, however, while feminist science studies has been more viscerally preoccupied with the corporeal configuration of diverse living things. Whatmore and Thorne draw on both theoretical streams, as well as recent trafficking between them and geographical communities, to develop the notion of *spatial formation of wildlife exchange* (SFWE), emphasising the "diverse modalities and spatialities of social mobilisations of wildlife" and focusing on the "distribution of the effects and shifting positionalities of animals in and through them" (187). The authors journey with African elephants through two SPWEs – global zoological collections of animal breeding and lineage information, and international 'science-based conservation' programs – tracing three moments as elephants are mobilised in each network: as virtual bodies, as bodies in place, and as living spaces. Whatmore and Thorne conclude that conservation bio-geographies territorialise distinctions between natural and cultural, wild and captive, even as these distinctions are increasingly undermined in practice.

³ This article, along with many others following a similar line of reasoning apropos the hybridity of natures/cultures, becomes particularly challenging in consideration of wildlife species who perhaps are best left, to the greatest extent possible, to themselves, whose spatial territories are best left with minimal human presence. On page 450, Whatmore and Thorne acknowledge but do not elaborate upon the ambivalence surrounding this sort of question.

4. Urban streets

i.

Griffiths, H., I. Poulter and D. Sibley. 2000. Feral cats in the city. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 56-70. London: Routledge.

Within urban environments, nature is (supposed to be) constrained and transformed; city spaces are subject to ordering processes that signal what can be included and what does not belong. Wild animals, both admired and detested by humans, occupy an ambivalent place in the urban imaginary: sometimes invited into spaces; sometimes repeatedly and forcibly removed; often resisting ordering processes at the local level. These animals transgress the boundaries between public and private, civilisation and nature, and urban and rural. Feral cats are an example of such transgressive creatures, and they relate to humans in a wide range of ways, both “inside” and “outside” urban society. Griffiths et al. interestingly point to the significance of the types of urban spaces that cats are more widely accepted as inhabiting: for example, wild cats are perceived as “fitting” in derelict or abandoned spaces, such as empty lots that are not “maintained”. The authors conclude that their analysis of feral cats suggests that the desire is still there in “(post)modern city” to “eliminate nature”, although at the same time, wild nature is desired and its perceived absence is mourned as a loss. Ultimately, however, such removals of nature are always partial and temporary: “an impossible project” (69).

ii.

Hinchcliff, S., M. Kearnes, M. Degen and S. Whatmore. 2005. Urban wild things: a cosmopolitical experiment. *Environment and Planning D: Society and Space* 23 (2): 643-658.

Following an explanation of the term nonhuman and why it is an important element to conceptualising a revitalised “political science” (a unified Science and Politics), the authors propose two interrelated questions that run through this article: what makes nonhumans matter and how do they matter? Things matter, the authors suggest, “through the fraught processes of engaging with human and nonhuman worlds” (644). There is, therefore, an inherent incompleteness and partiality to experimentation and research. It is also impossible, the authors state with support from Latour and others, for Science and Politics, currently fractured into two realms, to capture this mattering. Setting out to make connections, to act as social scientists, the authors join others who are observing these urban wilds: in this case, water voles, who leave material writings on the landscape through their activities and presence.⁴ Deliberating whether or not representation is at play in tracing these water vole writings and then writing them in turn, the authors conclude that “diagramming” is a better term, conveying a “writing around” rather than a “writing up” of water voles’ own writings. The authors critique a conventional interweaving of Science and Politics in the case of the water voles before proposing that ecologising politics rather than politicising ecology, may offer a way to unsettle ancient divisions between science and politics, humans and nature. The result is a cosmopolitics (Stengers): “a politics that is worked out without recourse to old binaries of nature and society” (643).

⁴ This notion of animal writing on the landscape is a useful and interesting one, perhaps helpful for conceptualising how scientists in Pacific Rim national park “read” cougar writings off of the landscape, with the help of other nonhumans – both animate and technological.

iii.

Philo, C. 1998. Animals, geography and the city: notes on inclusions and exclusions. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 51-71. London: Verso.

Distinguishing between animals' transgression (the result of material and/or metaphorical boundary crossing) and resistance (purposeful and intentional action against an entity), Philo focuses on the discursive treatment of animals who are transgressive, who "squeeze out" of places or roles set out for them. Philo thoroughly reviews how academic geography has treated animals pre-1998, surmising that "even in the texts where animals do make an appearance, there is still something missing: a sense of animals as animals; as beings with their own lives, needs, and (perhaps) self-awareness" (54). Turning attention to the history of city-making and the position of the city as a "flashpoint in the struggle between humans and animals" (58), Philo generalises two metanarratives: the process of categorisation and accompanying spatial allotment by which animals are cast in or out of place; and the splitting apart of the urban and rural along lines of civilised and barbaric, respectively. He highlights in particular the meat industry and its segregation of human/animal space in response to public demand for an end to animal violations of human space, and the processes by which even transportation routes were designated as for animals (railways) and for humans (highways). Philo concludes by calling for a (re)inclusion of animals into contemporary human-geographical research in order to understand the exclusion to which animals are so often subjected.

iv.

Wolch, J. 1998. Zoopolis. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 119-138. London: Verso.

Contemporary urban theory is deeply anthropocentric, referring to urbanization generally as a "development" of "empty" land to produce "improved" land. Wolch contests this conceptualisation: "development" is a "denaturalisation of the environment"; far from "empty", wildlands are full of nonhuman life; and "improved" land is impoverished in ecological terms. Even urban *environmental* theories are concerned with the pollution of what is characterised as human habitat, not animal habitat, and if nonhumans are acknowledged at all, "the rare and tame" are privileged. In an effort to develop an urban theory (informed by social theory and not biology or empiricist social science) "that takes nonhumans seriously", Wolch offers the term zoopolis: a "renaturalised, reenchanting city" that "allows for the emergence of an ethic, practice and politics of caring for animals and nature" (124). Wolch is one of the first authors in this bibliography to acknowledge recent efforts in the discipline of environmental history to 1) think about nature as an actor and 2) link urban and environmental change. She also suggests the importance of examining the rise of animal preservation groups through new social movement theory.

v.

Wolch, J. 2002. Anima Urbis. *Progress in Human Geography* 26 (6): 721–742.

Wolch begins with a brief but thorough review of the history of animal studies in geography, concluding that "attention to society-animal interactions was minimal and not theorized within larger frameworks for understanding cities or nature-society relations. Animals, like plants, were regarded as natural entities whose distributions could be mapped and modelled" (724). The "new" cultural animal geography, which arose out of a confluence of

human geography and social theory, cultural studies, natural sciences and environmental ethics and history, and more broadly by an emerging context of environmental concern and changes in scientific understanding of animal behaviour. Despite rich work in this new sub-discipline, urban natures remain critically undertheorised, and a “re-animating” of urban theory is needed. Work done in this regard has focused on how animals shape identity and subjectivity; the role of animals and urban place formation; and the ambivalences that arise when animals are considered in our urban moral landscape.

vi.

Wolch, J., A. Brownlow and U. Lassiter. 2000. Animal worlds of inner city Los Angeles. In *Animal spaces, beastly places: new geographies of human-animal relations*, edited by C. Philo and C. Wilbert, 71-97. London: Routledge.

Traditional, anthropocentric urban theory fails to account for the city’s constellations of humans and nonhumans, and a “transspecies urban theory” is required. In an effort to work towards such a theory, Wolch et al. draw on a focus group of eleven low-income African-American women in Los Angeles to explore relationships between cultural background and/or ethnicity, and urban human/nonhuman relations. They suggest that generational and class position, urban/rural background, and membership in historically/currently oppressed/marginalised social groups are all threads of a socio-cultural context that ultimately shapes the women’s perspectives on animals and appropriate human/animal relations.

5. Dinner tables

i.

Adams, C. 1999. Part one of *The sexual politics of meat: a feminist-vegetarian critical theory*. New York: Continuum.

Meat consumption is intimately bound up with gendered, racial and class hierarchies of power and prestige, privileging wealthy, white males and masculinity. Race, class and gender inequalities are manifest in and re-enacted by meat consumption in multiple material and discursive ways. Most obviously, perhaps, it is wealthy white males who have historically been awarded the greatest share of meat, particularly in times of scarcity but also in times of plenty. Meat eating is considered a masculine activity, and the language surrounding both meat and vegetable is deeply gendered. Vegetables, argues Adams, are a second-class food just as women are second-class citizens. To remove meat from one’s diet, she claims, is to “threaten the structure of the larger patriarchal culture” (179). This is a book far more concerned with human-human inequalities, as is revealed by the title, than with human-nonhuman inequalities.

ii.

Boyd, W. 2003. Making meat: science, technology, and American poultry production. *Technology and Culture* 42 (): 631-664.

Focusing on broiler chickens and the technoscientific practices involved in making a maximally biologically productive industrial chicken, Boyd asks how technoscience has subordinated the chicken's biology to the dictates of industrial production, and in doing so, he blurs the distinction between nature and technology. The story of the industrial chicken must be seen, says Boyd, as part of the larger process of agro-industrialization that has, with the aid of

key technoscientific tools and practices, drawn biological systems into circuits of industrial capital and facilitated a profound restructuring of the relationship between nature and technology. Boyd is interested in the kinds of technologies and biological characteristics of chickens that have been instrumental in these biological enrolments and how, in turn, "Nature fights back" against efforts to intensify production. Any program of biological intensification, concludes Boyd, will generate its own set of unintended consequences. This is an excellent article, useful in particular for its meticulous and detailed approach to research and writing concerning animals and technoscience, which retains a focus on animals throughout most of the article.

iii.

LeDuff, C. 2007. At a slaughterhouse, some things never die. In *Zoontologies: the question of the animal*, edited by C. Wolfe, 183-198. Minneapolis: University of Minnesota Press.

In a vivid and personal essay, LeDuff recounts his brief, undercover experience in a North Carolina hog plant, where thousands of hogs are killed each day, but racial and class tensions are still very much alive. The essay is largely comprised of a series of observations about the social dynamics existing between workers and the daily slaughter procedures at different production nodes along the "disassembly" line. He also briefly explores the macro-statistics of meat production in the US and North Carolina, exposing its generation of multi-billion dollars and multi-million animal deaths per year. It is an industry, LeDuff observes, that is much more closely scrutinised for its environmental practices than its employment practices, which consistently privilege whites over blacks, and blacks over Mexicans, most of whom are illegal immigrants and therefore less to "push back" against inhumane labour practices.

iv.

Ufkes, F. 1998. Building a better pig: fat profits in lean meat. In *Animal geographies: place, politics and identity in the nature-culture borderlands*, edited by J. Wolch and J. Emel, 241-257. London: Verso.

Over the last thirty years, the "interior geographies" of meat animals has undergone a dramatic shift from an emphasis on fast growth rates and large size to a desire for animals with less fat and higher ratios of lean muscle tissue. Correspondingly, the geography of meat production has changed at the multiple levels, from farm to international trading arena. Ufkes explores this shift in the context of recent agro-industrialisation in the US pork complex. The lean meat imperative has been integral to two main expressions of accumulation in this industry, she argues: 1) an increase in scale and standardisation of production; and 2) a movement toward industrial production of "boutique" pork products, such as organic meat. A steady consolidation of ownership and production in companies has been accompanied by a reverse trend of decentralisation in the geographies of meat production, wherein livestock may pass through multiple, far-flung sites before arriving at the store for sale. Technological advances in transportation and in meat appraisal have compounded these trends. This article would have worked well in the following section, as well.

6. Technoscience

i.

Birke, L. 2007 [1994]. Into the laboratory. In *The animals reader: the essential classic and contemporary writings*, edited by L. Kalof and A. Fitzgerald, 323-335. Oxford: Berg.

In practice, science is ambivalent about its use of animals, and the meanings of animals in the laboratory are located in a web of social relationships. Several strategies are put into place to maintain a division – physical and emotional – between scientist and lab animal. Lab animals are kept in cages away from the laboratory, and are tended by humans not directly involved in their utilisation in scientific practices. Scientists are trained to be objectively detached from the objects of their study, a trait that is, Birke argues, commonly associated with masculinity in contemporary Western culture. In this way and many others, the practice of science and how it relates to and draws upon animals is highly gendered.

ii.

Evenden, M. 2004. Locating science, locating salmon: institutions, linkages, and spatial practices in early British Columbia fisheries science. *Environment and Planning D: Society and Space* 22 (3): 355-372.

Early twentieth century fisheries science in BC revolved in the most basic sense around locating salmon; in doing so, scientists acted to locate local and international networks and institutions of ideas and influences. Tracing the movements, connections, and practices of human actors who were particularly influential in the development of salmon science at this time, Evenden demonstrates how “locating science and the science of locating” were “linked processes in several intellectual, institutional, and field contexts” (357). Evenden also draws on this case study to suggest the utility and limits to Latour’s theorising of scientific spatiality and the practice “science at a distance”, which relies on the transformation of objects of scientific inquiry into “immutable mobiles” that can be transported over distance to “centres of calculation”, where local knowledge is centralised and networks organised. Latour’s theories are helpful as a metaphorical frame for understanding the movement of ideas and expertise in scientific networks, says Evenden; in a “textured, empirical study” (371) such as the one carried out within this article, however, Latour’s metaphorical frame is too tidy, bounded and perhaps even uni-directional to account for both the iterative interchange of influence and ideas between and within uncontained core/periphery networks, and the messiness of collected data that travelled across space.

iii.

Franklin, S. 2007. Dolly’s body: gender, genetics and the new genetic capital. In *The animals reader: the essential classic and contemporary writings*, edited by L. Kalof and A. Fitzgerald, 349-361. Oxford: Berg.

Franklin follows the creation of Dolly, the famous cloned sheep, to inquire into the possible implications of this trumpeted technoscientific, biological revolution. With respect to Dolly, she asks how scientific knowledge comes to be embodied, how biology is seen to be authored, and how in turn such acts of creation are protected as forms of property. She also explores how the creation of Dolly disrupts traditional templates of genealogy, natural time, parentage, and gender. Dolly’s genealogy is reconstituted as a conduit for generating bio-wealth, and she is not viable as a single animal but rather as a stand-in for a kind of animal, a

new commodity species that Franklin refers to as “breedwealth”. Although Dolly was created from two female sheep, her creation does not, argues Franklin, herald an empowering of femininity and maternity. Rather, Dolly’s own maternal capacities are only significant only insofar as they confirm the success of her creation. Genetic cloning by nuclear transfer, says Franklin, “enables genetic capital to be removed from the animal herself” (352). Dolly’s creation by scientists disperses paternity more than displacing it – as Franklin says, “it may be that the stud has vanished, but there are other father figures” (354) – and her ownership a new form of biological enclosure. Ultimately, concludes Franklin, this new form of reproduction is familiarly paternalistic, but is marked by profound difference, namely that it removes reproduction from 1) the animal and places it under the sign of patent; and 2) genealogical space and time.

iv.

Haraway, D. 2004. Cyborgs to companion species: reconfiguring kinship in technoscience. In *The Haraway reader*. London: Routledge.

Haraway wants to rewrite the emerging definition for “companion species” to account for 1) all forms of post-cyborg “biological kind” – organic and inorganic; 2) difference; 3) corporeal conjoining of material and semiotic; and 4) complexity. Going back tens of thousands of years, she draws on emerging genetic theory to suggest that dogs evolved from wolves around the same time that humans began to walk on two legs. This early domestication was not, however, a purely human achievement; it was as much initiated by wolves/dogs as humans. Thus “co-evolution makes humans and dogs companion species from ‘the beginning’... with agency a mobile and distributed matter” (366). Telling this tale relies heavily on molecular genetics and hormone biochemistry, Haraway is quick to point out. But at the same time, we never invented nature or culture; all of the players emerge in relation and none precede, complete, their interaction. It is in the interaction that companion species take shape and co-constitute each other. The stakes are significant: at the very least, “how we think about liveness and agency” (367). “We are”, says Haraway, “in the fiercely local and linked global zones of technobiopolitics, where few species are more than a click away. Naturalcultural survival is the prize” (372).

v.

Heise, U.K. 2007. From extinction to electronics: dead frogs, live dinosaurs and electric sheep. In *Zoontologies: the question of the animal*, edited by C. Wolfe, 59-82.

Addressing what she sees as a paucity of attention given to electronic or robotic animals in cyborg studies, Heise traces the appearance of animal cyborgs in three instances: the film *Jurassic Park*; the computer project *Teirra*; and the book *Do Androids Dream of Electric Sheep?*. In the three cases, Heise explores the relationship between the emergence of artificially created animals and the extinction of natural species, and in the broader significance given to the natural in an increasingly technologised environment. She finds complex answers to these questions, but finds that all three cultural products 1) can be understood as efforts to redefine the role of nature and the animal in a world perceived to be almost entirely shaped by human culture and technology; 2) cast technology as a means to recuperate lost species diversity; 3) capture an essential element of the human relationship with nature: that for most people of industrialised nations, the experience of nature is deeply mediated by technology. Heise concludes that the cyborg figure needs to take on new, post-Haraway significance as a means to rethinking the human relationship to other species, no longer privileging the rights of humans – masculine or feminine.