

Animal architextures¹

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Introduction

Surely animals are neither objects nor people?

Perhaps they're not endowed with reason, but they respond to their surroundings; they can feel pain; perhaps they have emotions; and sometimes they have cultures too. True, animals are often treated as if they were 'objects', especially if they are made useful for humans. Hence, theories of domestication tend to define animals through idioms of purposeful human mastery, and emphasise control as a characteristic feature of human-animal relations². But the stories about the uses of animals that emphasise control have been paralleled by stories about care which recognise the sentience of animals. Indeed, biology runs the two together too, in one version telling us that happy farmed animals are productive animals and vice versa³. And then there are lay concerns with animal welfare, and the recent remarkable growth in animal studies, post-human and otherwise⁴. Animals have become actors with rights or propensities, and have become significant topics for social research. At the same time and as a part of this, human exceptionalism has been eroded: human beings are no longer unique.

In these stories people and animals go together. As many have noted, to learn about animals – for instance about dogs or farm animals – is also to learn about people. In this short chapter we address human-animal relations by taking a less obvious case, that of salmon farming. Using resources from anthropology and STS (science, technology and society), we explore how human beings and animals emerge in specific relations embedded in material practices. Our focus is on what a person or a salmon is made to be, relationally, in particular circumstances. Our counterintuitive guiding assumption is that the character of objects – and animals – has no shape or form outside practices and their relations. In short, it is that practices are performative⁵. Second, and following from this, we explore how different practices generate different versions of what it is to be an animal or a person. Then, and third, we consider what is animal about the 'animal object' in human-animal relations. In particular, we touch on the qualities or textures of those relations, and their choreography as they extend through and order relations in time and space, in what we refer to as architextures. Finally, we briefly note that agency is a relational matter, and that, notwithstanding the self-evidently restrictive and industrial character of agriculture, animals shape people just as much as people shape animals.

So what can salmon tell us about animals, or human – animal relations? Some differences are obvious. Unlike four-legged, furry mammals, farmed salmon occupy fluid spaces. The surface of the

² A definition which is often cited is provided by Juliet Clutton-Brock, who defines a domesticated animal as 'one that has been bred in captivity for purposes of economic profit to a human community that maintains complete mastery over its breeding, organization of territory, and food supply' Clutton-Brock (1989, 7). See also Leach (2003).

³ See, for instance, Fraser (1993).

⁴ For examples of a large genre see Wolfe (2003) and Despret (2007).

⁵ The approach comes in various forms, including feminist material semiotics (for an animal-relevant illustration, see Haraway (2007), and actor-network theory and its derivatives, and recent work in anthropology. For animal-relevant illustrations see, for instance, Thompson (2002), Hinchliffe *et al.* (2005), Helmreich (2009), Singleton (2010), Abram and Lien (2011) and Law and Moser (2012) and (on salmon), Lien and Law (2011) and Law and Lien (2013).

water marks a boundary between our habitat and theirs. They are mostly out of sight, their body language is difficult to 'read'. Some would even argue that they don't count as animals at all, because they are fish, and fish aren't animals. Or perhaps they are, for cultural categories are dynamic. Recent animal welfare legislation in the EU includes farmed fish, and recognizes their ability to feel pain.

Exploring animals from the vantage point of farmed salmon, we draw attention to the margins, to relations that are currently in the making. We enter a field in which few things are 'given', where practices are invented every day, and where new ways of being animal – and being human – are constantly performed. The textures of material practices that we describe here are indeed 'salmon specific': animals are only known through situated practices. Hence it is through their different textures, and architextures that human-animal relations take their distinctive form. A study of pigs or cattle would necessarily involve different relations. However, we suggest that this study of an animal that is so visibly in the making is instructive, precisely because its very marginality raises the question of what it is to become – animal.

First Feeding: Symmetry and Performativity

STS 'material semiotics' explores how objects (or animals or people) get assembled in different practices. In order to do this it adopts what Michel Callon calls 'generalised symmetry'.⁶ We need, he says, to try to put our assumptions about objects (or actors or animals or people) on one side, and treat all the elements in a practice in the same terms. Famously he explored the relations between fishermen and scallops in this way, looking to see what form these took in practice. So what happens if we extend this approach to the salmon farm?

In the hatchery the eggs hatch out to form alevins. The alevins are not-quite-fish that feed on their yolk-sacs. They live in shallow, water-filled trays lined with AstroTurf. After a few weeks they turn into tiny fish and are decanted into cylindrical tanks a metre and a half across, and a metre deep. At first they mostly cower at the bottom, clustered together, heads facing into the flow of water.

Irene is looking down at them. Then she presses a button to start the feeding system. This is a screw-thread that gently sprinkles tiny amounts of powdered feed onto the surface of the water. Irene looks into the tank intently. She's holding still: she doesn't want to frighten the tiny fish. She's not quite holding her breath, but she's just a little tense. For a few minutes she watches. Then, suddenly, she smiles and relaxes. 'They're feeding', she says. And indeed they are. Every ten or fifteen seconds one of the small fry is detaching itself from the dark shoal at the bottom of the tank. It darts up, gulps down a particle of feed, and then it darts down again. Now she is smiling broadly. It's a crucial moment. Sometimes they don't feed. There's something wrong. But there isn't going to be a problem with this tank.

Seen in this way, first feeding is a performative practice. Something important is being done in the web of relations that make up the practice. We can see this if we try, symmetrically, to avoid making assumptions about the attributes of fish and see what they are being made to be. This practice starts with fish that are passive, fish that don't feed, and it ends with active fish that do. The transformation is possible because the fish are lodged in a web of relations with other objects or

⁶ Callon (1986).

actors including Irene, the feeding mechanism, the feed itself, and the water. It's this web of relations that turns the fish into feeders and people into carers worrying about those fish. Though, to be sure, that web reaches further into fish propensities, or fish biology, and into other materials too. So, for instance, the feeding mechanism depends on electricity while the feed is an industrial product that draws on a web that includes fishing fleets in Chile, feedstock fish, and a network of financial and logistical relations. All of these (or something like them) are webbed together to turn non-feeding fry into feeding fry. Fish – or feeding fish – are done in practices. They are an effect of relations. This is our core argument. It is the core argument of material semiotics.

Vaccinating: Heterogeneity and Insecurity

Actors, objects and animals are shaped in practices, and their relations, but those relations are materially heterogeneous and they are never entirely secure.

A few months on, and the fish are around eleven centimetres long. They've been delivered by lorry from the hatchery to a second site where they will grow until they move to the sea. And the first task is to vaccinate them.

There's a complicated arrangement of pipes and pumps that delivers them to the vaccination cabin. Here they slide down a stainless steel chute, flapping in protest, and fall into a wire basket in a trough. There's water in this, together with anaesthetic: the fish need to be anaesthetised before they are put in the vaccination machine.

Kristin pulls a lever: the basket lifts out of the water-anaesthetic mix, and the fish slide onto a tray where she picks them up, two at a time with rough waterproof gloves. She makes sure they are pointing the right way, and drops them into the grooves on a tiny conveyer belt which feeds them into the vaccination machine. It's all quite fast. And it's important that the fish are limp when this happens. If the anaesthetic gets too dilute the fish start flapping in protest. Then Kristin needs to stop everything, add anaesthetic to the water, and feed the fish back into it until they are docile.

This scene can also be understood as a web of relations that shapes the fish on the one hand and people on the other. But this time it is the other way round: the fish start out lively and they end up passive. The web of relations includes the fish themselves, Kristin, and her gloves. And then it includes water, pipes, some more or less high-tech machinery, anaesthetic, pumps, and an electricity supply. The vaccination machine includes vaccine itself, optical sensors, electric motors and needles, so the web of relations leads quite quickly to the pharmaceutical industry. But let's make two other points.

First, the elements in the web of relations are materially and socially heterogeneous. As with the first feeding, humans, animals, technologies, institutions, and naturally occurring elements (such as water) are all being woven together. The character of the animal – the passive salmon – is being done in a particular socially and materially heterogeneous weave. And then, second, that weave is precarious. It doesn't go wrong most of the time, but the potential for failure is always there. If the anaesthetic gets too dilute then the fish are lively. If the electricity fails everything stops. (Indeed, the site has a backup generator). How objects – or animals – are done in practices depends on the weave. Nothing is fixed or given. Everything is in process, everything is a matter of becoming. As it

unfolds (and notwithstanding the industrial concern with order) a large part of what is happening looks more like tinkering than centralised planning or control.⁷

Feeding on the Fjord: Multiplicity

If objects – and animals – take the shape that they do in webs of practice, then this implies that they are likely to change their form between different practices. Salmon starting to feed aren't, for instance, like those about to be vaccinated. But let's add another ethnographic layer to this tale of difference

We are another year on. The fish have moved to the sea. Nearly a metre long, they are now in large sea pens, 25 metres across, and 30 metres deep. If you look down into the water you can see some them, but most are invisible. The feed, now in the form of pea-sized pellets, rattles down air ducts and blows out onto the surface of the pen. But how much feed do they need? How much do they want? These are pressing questions: the cost of feed is around 60% of the cost of raising a salmon.

Christoffer is up on the gantry above the water with a bucket of feed and a scoop. He's flinging pellets at the surface of the water, and he's trying to see what is going on. Do the fish rise greedily and gulp the pellets down? Does the surface of the water boil as they do this? That would be a good sign – though it may mean they aren't getting enough to eat. Or, here's another possibility, do they eat but without very much enthusiasm? Perhaps, then, the level of feeding is just about right? And then, here's a third possibility, perhaps the salmon are ignoring some or all of the feed? If this is happening then it's worrying. Perhaps they are being overfed. But why? There may even be disease in the tank.

In the first ethnographic snippet, passive salmon were rendered active. In the second, active salmon were rendered passive. And now, in this third ethnographic moment, the salmon are being done in the web of relations as hungry, not very hungry, or not hungry at all. Again this is a relational effect. It's tempting to say 'they are hungry', full stop, or 'they are not'. But in practice this is misleading, since the only direct way of determining this from a human point of view is by dropping feed on them, and looking to see what happens. So what we're saying is that while we tend to imagine that objects – or salmon – have more or less stable and context-independent attributes, in practice if we look at scenes in this way, then they are done differently in different locations. In this world of becoming, this has the following consequence: any kind of continuity is an empirical matter.⁸ This means that if we talk of 'objects', 'animals', or 'salmon' as somewhat stable between practices, then this is itself some kind of achievement. It takes effort to link different practices together to arrive at continuity. So how is this done? STS answers this question in three ways.⁹

First, much of the time the issue simply doesn't arise because differences (and their practices) don't overlap. So, for instance, if salmon in relation to humans take one form in the hatchery and another quite different form out on the fjord, then usually this doesn't matter. The issue of difference doesn't arise; nobody knows, and nobody cares: there is social and geographical segregation.

⁷ For an exploration of the tinkering implied by care in the context of health care see Mol (2008).

⁸ The point is carefully explored in Mol (2002).

⁹ For survey and discussion of these strategies see Mol (2002) and Law (2004).

Second, it is taken for granted that objects express themselves in different ways in different circumstances. Salmon get bigger, or they get ill and stop eating, or they need to move from fresh water to the sea, or they escape and are encountered in rivers as ‘alien species’. These are cases in which they, the salmon, express themselves differently – so they need to be handled differently too.¹⁰ This pragmatic and ‘realist’ assumption has a powerful grip on Western ways of thinking about the world.¹¹ The argument is that reality – including objects – is pretty determinate, but it has to be handled in different ways in different places. A similarly ‘realist’ strategy focuses more on knowledge, and says that perspectives vary. So, for instance, if you look at a textbook on salmon it juxtaposes the anatomical, the endocrinological, the behavioural, the physiological and the environmental. Each chapter says something different, but the assumption is that the different approaches simply offer different perspectives on a single (kind of) entity.

The third approach, and the one adopted here, is quite different. This says that salmon (or objects) are shape-shifters: that in practice they aren’t particularly stable because different practices do them in different ways; that they are therefore multiple in form; perhaps, indeed, that they are fluid, changing shape as they flow between practices. To put it succinctly, the assumption is that objects have a variable geometry. And then the argument is that if we want to understand the character of objects (or animals) in practice, in this way of thinking the challenge is to find ways of tracing and talking about that variable geometry.¹²

Dead Fish: Texture

Objects are done in practices and their webs of relations: this is our argument, and it applies to people and to animals including salmon. But at the same time it is clear that animals are not the same as objects – and indeed that different kinds of animals are not like one another. So what is it that, distinguishes animals (or salmon, or farmed salmon) from objects? How is this to be understood from an STS or material-semiotic point of view? To answer these questions we need to talk about choreographies and architextures on the one hand, and textures on the other. Textures first.

Out on the fjord with 50,000 fish in each of the pens, the farm as a whole may be holding over half a million fish. With a population that size some die will each day. It’s important to separate out the dead from the living each day. There’s a pipe which pumps up water and dead fish from the bottom of each pen and deposits them on the deck. Then you pick up the fish and put them in a wheelbarrow. They can be large – around five kilos – and picking them up isn’t easy for beginners. You put on rough gloves and you go to pick them up, but then you discover that even with those gloves they are very slippery. Sometimes you think you’ve got a grip of a fish only to discover that you haven’t, and it slips from your hands. Those who know what they’re doing grab the fish very firmly around the base of the tail. This is because the tail itself is rigid cartilage, and very slightly broader than the fleshy base of the tail. Then, if your grip is tight enough, you can lift the fish with one hand and toss it into the wheelbarrow.

¹⁰ See Lien and Law (2011).

¹¹ Realism is a family of philosophical positions which assume that reality has more or less determinate attributes, even if these are often unclear to human beings.

¹² For discussion of fluid and other more complex objects see Mol and Law (1994), and Law and Singleton (2005).

Here's the argument: that the webs of relations in practice have specific relational textures. That's the importance of this ethnographic moment. For the people doing this work salmon, even dead salmon, are slippery. Return, now, to Christoffer.

He's flinging pellets at the surface of the water and then he's looking intently at how the salmon react. But this isn't as easy as it sounds. If he's lucky the day is calm, its overcast, but it isn't raining. Then at least he can see a little way into the water. If he's unlucky, then wind, waves, or rain are breaking up the surface of the water, or sun is reflecting off it and he can't see much at all. But even when conditions are ideal he can only see two or three metres into the water. If there are 50,000 fish he can only see a few dozen of them. He really can't see what most of them are up to. And they are constantly on the move as well.

What can we say about the web of relations here? What do salmon become for people in this context? Here they are no longer slippery. Instead, and barely visible at best, they have become elusive. So here we have a second relational texture to set alongside the first. Slippery, elusive, and in other ethnographic contexts we could go on adding to the list; timid, perhaps, for Irene at the moment of first feeding; lively and resistant for Kristin when the anaesthetic gets too dilute in the course of vaccination. And so on.

So this is our argument: the textures of the relations that make up the webs of practice characterise whatever is caught up in them. They also differentiate animals from one another (the textures of dog-human relations are quite unlike those relevant to fish and people.) The argument is relational. Salmon are slippery in relation to people in particular practices, and not, for instance, in relation to parasites such as sea-lice which anchor themselves firmly to scales or fins.) On the farm they are slippery, and they're elusive, they are difficult to see, secretive and sometimes mysterious. For people. What are they up to, down there in the pen? The answer is that even though they are confined, it isn't very clear, at least to the humans on the farm.

The argument needs to be made with care. We are not necessarily – and perhaps even usually – talking about relations between salmon and people that are direct. In the heterogeneous webs of practice textures are more often mediated.

At the end of their lives the salmon end up in the slaughterhouse. Piped from a boat, they slide flapping down a chute. Carried by a small conveyer belt they enter a long metal box where they are stunned. At one moment, this is the theory, the salmon are conscious, they are sentient, and they are capable of suffering pain. And at the next moment they are unconscious, still alive but unconscious. Emerging from the box they are carried to a place where they are killed, with a quick knife stroke to the major artery to the gills.

This is another practice: the practice of humane slaughter, the way of minimising pain for the fish. Contemporary veterinary science has condemned the alternatives. For instance, suffocating fish with carbon dioxide causes them distress. Electrical stunning is to be preferred in the moment before death.

Textures, then, are mediated. There are other materials and other relations at work in the textures that relate animals and humans – and these help to define animals for humans in those practices. If you need to pick up dead salmon gloves are useful. Indeed, they are more or less necessary. They

make the fish slightly less slippery. And Christoffer's attempts to see whether the salmon are eating – themselves mediated in relations that include pellets, scoops and polarising sun-glasses – are assisted in a few of the pens by underwater television cameras.¹³ And then, at the end of life in the slaughterhouse, the web of relations extends through machinery to welfare science, to the study of fish sentience, and to the official state regulations that follow from those studies. And here's the bottom line, the textures of fish-human relations have changed in the slaughterhouse. They are being done differently. Now fish can feel pain. Even fear.

Roofs and Lights: Choreography and Architexture

Textures define and characterise the qualities of relations in practices – including the only relations we know about, those that bind and shape people and the worlds they are caught up in. Some of these assemble animals and people. Read Donna Haraway on dogs, and you see those textures take a series of specific forms: eye contact; gesture; the importance of treats; the touch of hand and fur; or tongue and face¹⁴. Go to a fish farm and look at how people work with salmon, and those textures are entirely different: slippery, elusive, timid, and all the rest. So textures help to determine the character of the animal in relation to the human, but so too do choreographies or architextures.

Go back to the moment of vaccination. The fish are washed a long a pipe and dropped into a large tank in a building. There's no daylight here. Instead there are powerful lights. The young salmon are going to spend four, six or eight months here feeding and growing. And sometimes those lights will be on, and sometimes they will be off. So what's the pattern?

The answer is, it depends. Some salmon follow the cycles of the Nordic season, short days in December and more daylight towards June. Triggered by these changes they become smolt, ready to go to the sea, in spring. Others, destined to be autumn smolt, are speeded up. Given artificial light for twenty four hours a day for six months in the Norwegian winter, they live through an artificial six-week winter in the Norwegian summer. Then the lights go back on to trigger smoltification in the autumn. The reason for this? The fish farmers don't want to send all their fish to the fjord at the same moment. The market for salmon isn't seasonal.

Choreographies have to do with ordered arrangements. Partly these have to do with heterogeneous relations within particular practices – think of the process of vaccination. They also, however, have to do with relations between practices. The latter extend across space: the processes of fish farming include hatcheries, fresh-water farms, and sea farms. And they also extend across time: chronologies and successions and repetitions are ordered in a fish farm. More correctly, times are relations that are ordered or choreographed within and between practices. Times may be stretched out or contracted. This is what is happening as the farmers switch the lights on and off. And/or they are chained together, so that the fish indeed move from hatchery to the fresh-water farm to the fjord, and then, at the end, to the slaughterhouse. Or they may come in the form of cycles – daily, weekly, or seasonal.

So what does this have to do with animals? The answer is that the timing, sequencing and choreographing of relations needs to be set alongside the textures of relations. Human-animal

¹³ The use of underwater cameras adds another texture to the relation. For more ethnographic details on feeding farmed fish, see Lien (2007).

¹⁴ Haraway (2003). On people and cows, see Law (2010).

relations are defined by textures (slippery or furry, or lively or elusive, or susceptible to pain) but they are also defined by the ordering of sequences. And it's the quality of these orderings that we want to call architextures. The dog needs to be walked twice a day. The fish need to be fed eight hours a day, or vaccinated at certain times, or moved from fresh water to the sea. Our argument is that it is particular combinations of relational textures and architextures that characterise human-animal links and turn animals into objects or subjects with particular lively attributes.

Conclusion

We have argued that objects are an effect of heterogeneous and more or less precarious webs of performative practice that also enact humans. These webs take different forms in different practices, and those different forms are woven together to make more or less continuous objects. But we have also suggested, first, that the relations enacted in practices display particular qualities or textures, and second, that there are specific patterns or textures of choreography – or architextures – that order time and space and their qualities both within and between practices. And finally we have argued that it is in these textures and architextures that animals – or more precisely human-animal relations – take their distinctive form. Animals are not in and of themselves furry, scaly, elusive, prone to sickness, endowed with a life-cycle, loyalty, and all the rest. They develop attributes such as these in relation to people who are also, and at the same time, being given form and endowed with relational qualities and attributes. In short, practices enact people and animals together.

This way of thinking about animals has a number of implications. First, it stands in tension with any version of human exceptionalism: both people and animals are taken to be relational effects. Second, it resists those versions of materialism that argue that it is possible to apprehend the material world outside of, or apart from, situated practices.¹⁵ It argues instead that while humans aren't exceptional, it is only in practices that enact humans alongside animals that it is possible to know anything about the latter. Third, it makes no assumptions about agency, human or otherwise, outside the webs of practice that constitute these. In the first instance people aren't prime movers – but then again, neither are animals or objects. Rather it is assumed that agency draws on and is distributed through webs of relations. It is only in particular practices – and for particular reasons – that it becomes possible to locate it in particular human – or animal – places. And then, finally, and as a part of this, it notes that it only makes sense to say that people control domesticated animals in very particular contexts and respects. Even at a highly ordered site such as a salmon farm, it is also plausible to argue that salmon, in fact, control people. If humankind is to consume salmon on an industrial scale, then people are put to immense effort to fit round the demands made of them and their (multispecies) surroundings by the salmon that they farm. The breeding, the feeding, the trawling to secure fish feed, and the journey from fresh to salt water: for even if people end up eating the salmon which thus sustain human lives, what the salmon have made people do along the way is scarcely trivial.

References

Abram, Simone, and Marianne Elisabeth Lien (2011), 'Performing Nature at World's Ends', Ethnos, 76: (1), 3-18.

¹⁵ This is a possible reading of, for instance, Bennett (2010).

Bennett, Jane (2010), Vibrant Matter: a political ecology of things, Durham and London: Duke University Press.

Callon, Michel (1986), 'Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of Saint Brieuc Bay', pages 196-233 in John Law (ed.), Power, Action and Belief: a new Sociology of Knowledge? Sociological Review Monograph, 32, London: Routledge and Kegan Paul.

Clutton-Brock, Juliet (1989), The Walking Larder: Patterns of Domestication, Pastoralism, and Predation, London: Unwin Hyman, 1989.

Despret, Vinciane (2007), Bêtes et Homes, Paris: Gallimard.

Fraser, David (1993), 'Assessing Animal Well-Being: Common Sense, Uncommon Science', pages 37-54 in Bill R. Baumgardt and H. Glenn Gray (eds), Food Animal Well-Being, Indiana: USDA and Purdue University Office of Agricultural Research Programs, also available at <http://www.ansc.purdue.edu/wellbeing/FAWB1993/Fraser.pdf>.

Haraway, Donna J. (2003), The Companion Species Manifesto: Dogs, People, and Significant Otherness, Chicago: Prickly Paradigm Press.

Haraway, Donna J. (2007), When Species Meet, Minneapolis and London: University of Minnesota Press.

Helmreich, Stefan (2009), Alien Ocean: Anthropological Voyages in Microbial Seas, Berkeley: University of California Press.

Hinchliffe, Steve *et al.* (2005), 'Urban Wild Things: a Cosmopolitical Experiment', Society and Space, 23: (5), 643-658.

Law, John (2004), After Method: Mess in Social Science Research, London: Routledge.

Law, John (2010), 'Care and Killing: Tensions in Veterinary Practice', pages 57-69 in Mol Annemarie, Ingunn Moser, and Jeannette Pols (eds), Care in Practice: on Tinkering in Clinics, Homes and Farms, Bielefeld: Transcript Publishers.

Law, John, and Marianne Elisabeth Lien (2013), 'Slippery: Field Notes on Empirical Ontology', Social Studies of Science, (forthcoming), also available at <http://www.sv.uio.no/sai/english/research/projects/newcomers/publications/working-papers-web/Slippery%20revised%2013%20WP%20version.pdf>.

Law, John, and Ingunn Moser (2012), 'Contexts and Culling', Science, Technology & Human Values, in the press.

Law, John, and Vicky Singleton (2005), 'Object Lessons', Organization, 12: (3), 331-355.

Leach, Helen M. (2003), 'Human Domestication Reconsidered', Current Anthropology, 44: (3), 349-368.

Lien, Marianne Elisabeth (2007), 'Feeding Fish Efficiently. Mobilising Knowledge in Tasmanian Salmon Farming', Social Anthropology, 15: (2), 169-185.

Lien, Marianne Elisabeth, and John Law (2011), 'Emergent Aliens': On Salmon, Nature and their Enactment', Ethnos, 76: (1), 65-87, also available at <http://www.sv.uio.no/sai/english/research/projects/Newcomers/publications/working-papers-web/Emergent%20aliens%20Ethnos%20revised%20WP%20version.pdf>.

Mol, Annemarie (2002), The Body Multiple: Ontology in Medical Practice, Durham, N. Ca., and London: Duke University Press.

Mol, Annemarie (2008), The Logic of Care: Health and the Problem of Patient Choice, London: Routledge.

Mol, Annemarie, and John Law (1994), 'Regions, Networks and Fluids: Anaemia and Social Topology', Social Studies of Science, 24, 641-671.

Singleton, Vicky (2010), 'Good Farming: Control or Care?', pages 235-256 in Annemarie Mol, Ingunn Moser, and Jeannette Pols (eds), Care in Practice: Tinkering in Clinics, Homes and Farms, Bielefeld: Transcript.

Thompson, Charis (2002), 'When Elephants Stand for Competing Models of Nature', pages 166-190 in John Law and Annemarie Mol (eds), Complexity in Science, Technology, and Medicine, Durham, N Ca.: Duke University Press.

Wolfe, Cary (2003), Animal Rites: American Culture, the discourse of species, and posthuman theory, Chicago: Chicago University Press.