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Is There a Turtle in this Text? Animals in the Internet of Robots and Things

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Abstract

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Animals in the Internet of Robots and Things

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Nonhuman animals are ubiquitous in IoT discourse as researchers draw on animal metaphors, models and analogies to think through the social and ethical implications of these new technologies. Focusing on representative texts by Sherry Turkle and Julian Bleecker that offer two contrasting positions on the value of these technologies, we show how regardless of the position taken, the use made of nonhuman animals in this emergent field strengthens assumptions that are harmful to animals and that animal studies researchers have fought hard to end. Our title pays homage to an essay in literary feminism by Mary Jacobus entitled 'Is There a Woman in this Text?' that famously drew attention to the way women are sacrificed in philosophical exchanges between men. This essay seeks to do something similar for nonhuman animals in highlighting the ways they risk becoming an unrecognised casualty of discourse surrounding smart objects and robots.

Keywords: Internet of Things, Robots, Digital Companions, Sherry Turkle, Julian Bleecker

On a visit to an exhibit on Darwin at the American Museum of Natural History, Sherry Turkle, professor at MIT and her fourteen-year-old daughter see a live Galápagos turtle in a glass case at the entrance.[1] The turtle is completely still. 'They could have used a robot', Turkle's daughter says (513). She was 'utterly unconcerned with the animal's authenticity', Turkle writes and when she starts to talk to others waiting in the queue, she finds other children agreeing with her daughter. The anecdote appears in the essay 'Authenticity in the Age of Digital Companions', in which Turkle argues the risks of allowing new generations of robots designed for social interaction to substitute for real human relationships. The anecdote is repeated in Turkle's book *Alone Together: Why We Expect More from Technology and Less from Each Other*, which reports on fifteen years of research on human relations with robots ranging from virtual toys and pet robots marketed to children to therapeutic robots designed for elderly residents of nursing homes.

Turkle's concerns stem from the attachments that she finds people are forming with robots: 'In the presence of … robotic creatures people are having feelings that are reminiscent of what we would call trust, caring, empathy, nurturance and even love, *if* they were being called for by encounters with people' (504). But these feelings, in Turkle's view, are based on a fiction, on robots that have been programmed to simulate engagement with us by making eye contact, by mirroring our words and tracking our movements. Turkle calls this a crisis of authenticity – a failure to value real relationships, just as her daughter failed to value the presence of a real Galapagos turtle. '[S]imulated love is never [real] love', (512) she writes, because you cannot have a real relationship with something that has no feelings and that cannot understand you. Are there 'some tasks such as providing care and companionship that only befit living creatures?' (501), Turkle asks. 'Can a human being and robot ever be said to perform the *same* task?' (501). It is clear that when it comes to love, the answer for Turkle is no.

If love is the issue though, then the daughter's remark – that the museum could have used a robot – could be read differently, suggesting not less, but *more* love and care for the living turtle. After all, the choice of a robot would have enabled the turtle to avoid being shipped to the museum to spend six months alone in a glass cabinet. In Sherry Turkle's view, the choice of a living turtle was consistent with the museum's focus on authenticity – she points out that they had Darwin's *real* magnifying glass, his *actual* notebooks and a *real* Galapagos turtle. But in lumping the turtle in with Darwin's *objects*, Turkle is performing the same category mistake for which she criticizes her daughter. If her daughter seemed unconcerned by the difference

between living creatures and things, when it comes to the turtle, so is Turkle. Like any narrative, an anecdote sometimes says more than the narrator intended. In Turkle's essay, the anecdote about the turtle does what the essay otherwise works to resist: it opens up her discussion of human-robot relations to allow nonhuman animals to come momentarily into focus.

Turkle is one of many scholars whose work explores the growing ubiquity of smart objects in human lives. Consideration of the social and ethical issues raised by these new technologies has overwhelmingly concentrated on how these technologies alter our conceptions of what it is to be human. For Katherine Hayles, the Internet of Things radically changes the relationship between humans and what she calls our newly 'animate' environment by challenging the idea that cognition and agency reside solely in human consciousness: 'no longer is human will seen as the source from which emanates the mastery necessary to dominate and control the environment. Rather, the distributed cognition of the emergent human subject correlates with … the distributed cognitive system as a whole, in which "thinking" is done by both human and nonhuman actors' (290). The Internet of Things might be seen as the physical correlate of a shift in human object relations taking place in a number of disciplines from anthropology to literature to the social sciences, in which objects are newly understood as 'actants' with a type of agency that helps build, maintain or disrupt the social networks in which humans are embedded. It is a shift in which 'the demarcation between the world of things and the world of persons is losing its former obviousness and solidity' (Pels, Hetherington and Vandenberghe 4).

But as objects become smart, communicative and even agentive, what happens to the fight for recognition of these qualities in animals, those other 'nonhumans'? As humans learn to think of objects in new ways, how might this affect the lives of animals, and our relation with/to them? In this essay, we are interested in beginning a different conversation about the Internet of Things and robots by looking at them from the perspective of animal studies, that is from a perspective that values the experience and lives of nonhuman animals and that is alert to the ways in which human activities, including discursive activities, damage or end those lives. What happens if we put the turtle back in, as it were, making him central,[2] rather than peripheral to the discussion?

This is not to imply that animals are absent from this field of discourse. On the contrary,

animals permeate the language and practices of writers in the Internet of Things and robots. Author and researcher Bruce Sterling calls smart objects 'spimes' and describes the new class of (human) 'spime wranglers' that will be needed to manage them on this new frontier. Anthropologist of digital media Genevieve Bell refers to 'feral technologies' and 'feral data' as a way of talking about the unforeseen consequences of Internet technologies (Tucker). Animals are present in analogies used by robot ethicists discussing whether and how we should care about robots. Steve Petersen, for example, tackles the question of whether it is ethically appropriate for humans to design what are essentially slaves programmed to love their servitude and concludes that such a practice can be supported because we do the same in selectively breeding dogs who love to fetch and perform other services for humans. And animals are also ubiquitous as models for digital companions. Many of the current types of social robots – those designed for relationships with humans – are shaped like animals (Miklosi and Gacsi), including imaginary animals such as the Probo robot, one of the breed of 'huggable' robots aimed to mitigate stress for hospitalized children, or the Aflac duck introduced in 2018, or Paro, the most well-known of the therapeutic robots, shaped like a baby seal. Animals are everywhere in the Internet of Things, helping to build the models, metaphors and ethical frameworks of this field, both visible like the turtle in the glass case, and invisible in that they are rarely the subjects of this discourse. Indeed, to address the Internet of Things from the perspective of animal studies is not to imply animals are absent, but to ask how they are situated by this discourse. What assumptions about animals are being reinforced through the discursive service they perform? Consider, for example, how anthropologist of technology Genevieve Bell uses the phrase 'feral technologies.' When asked about this idea in an interview for *The Guardian*, Bell (whose Twitter handle is bell@feraldata) explains:

> I began to think about camels, goats and cats – lots of animals jumped the boats in Australia and created havoc by becoming feral. Would feral be an interesting way for thinking about how technology had unintended consequences?

This usage wrongly endows the word 'feral' with a romantic rebellious aura – with a touch of postcolonial satisfaction at the way that the animals brought by colonists so quickly escaped their control. But as animal studies researchers have pointed out, animals who are constructed as feral and therefore valueless are 'subjected to the most terrifying and uncompromising forms of violence' (Wadiwel). In choosing the feral animal as a metaphor for technology, Bell obscures

the fate of the real bearers of this label. To look at discourse surrounding the Internet of robots and things from the perspective of animal studies means to be 'committed to … always asking "Where are the real animals in all this?"' (Chaudhuri 5).

Our title refers to a well-known essay in literary theory by Mary Jacobus entitled 'Is There a Woman in This Text?' about the place of women in discourse, focusing on a particular argument made by the philosopher Stanley Fish. Jacobus describes how Fish launches his argument through an anecdote about a female student whose naïve question facilitates the exchange between two male professors who hold rival theoretical positions. The presence of a third party – the 'idiot questioner disguised as dumb blonde' (117-118), as Jacobus describes her – acts as both catalyst and ground for the subsequent competitive philosophical exchange. In Jacobus's words, 'the function of the female in scenarios of this kind is to provide the mute sacrifice on which theory itself may be founded; the female is silenced so that the theorist can make the truth come out of her mouth' (118). Such triangular configurations appear frequently in accounts of how gender and race figure in relations of power and desire. Numerous theorists have analysed the way women function as the prize or stake in conflicts between rival groups of men (for example, Gayle Rubin; Susan Fraiman). To draw attention to the woman in the text is to give voice to that excluded third party of the triangle that mediates relations between the two principals. In this essay, we argue for the merits of applying this geometry to nonhuman animals and the role *they* play in mediating relations between humans and artefacts. To give voice to the turtle is to insert the interests of nonhuman animals into this conversation about human relations with smart objects.

It may seem that we are raising two separate issues, namely the use of animal metaphors in IoT discourse (describing data as 'feral'), and the creation of animal analogues (modelling Paro on a baby seal). Yet as Foucault argued, discourses are not merely 'groups of signs' but include 'practices that systematically form the objects of which they speak' (49). The choice of a baby seal as model for a robot reinforces the privileging of 'charismatic' species, usually mammals and often in neonatal or juvenile form as suitable recipients of human care and affection. The assumptions embedded in the morphology of Paro are thus as much a concern for the discursive work they perform as the consequences of animal metaphors.

The Internet of Things and robotics represent two major fields of investigation. Conventionally, robotics focuses on building artefacts to manipulate objects and simulate other

human functions in a single entity. The Internet of Things, conversely, describes the spread of computing power into the environment, where everyday objects from telephones to light bulbs are equipped with technologies that make them 'smart', capable of collecting information and acting upon it without human intervention. An exploration of the discursive uses of nonhuman animals in both these fields is beyond the scope of a single essay. Since our intention is to invite further study by pointing to the questions and problematics raised by the way these fields engage with nonhuman animals, we have made no attempt to be comprehensive, but have chosen instead to begin this conversation with two representative and well-known essays by researchers in these fields. The essays we have chosen exemplify two major streams of discourse surrounding the Internet of Things and robots. Sherry Turkle is the author of six books about the Internet and one of the most high-profile critics of the effect of smartphones and robots on human relationships and everyday communication. The essay we look at here, 'Authenticity in the Era of Digital Companions', formed the substance of a widely seen TED Talk 'Connected, But Alone' with (at the time of writing) over five million views.

Our second text is an essay by Julian Bleecker entitled 'Why Things Matter'. Bleecker's essay represents a genre in IoT discourse known as 'design fiction', texts that imagine the future possibilities of a world of Internet-ready things. A large part of the IoT field is composed of design fictions and of these Bleecker's essay is especially well known. Finn Jorgensen argues that such design fictions are a critical part of IoT discourse, noting that 'to properly understand the Internet of Things, we need to look at its storytellers, the ones selling the idea of the connected future' (46). We chose Bleecker not only because he represents that strand of IoT discourse that in contrast to Turkle is openly utopian about the technology, but also because he explicitly makes nonhuman animals part of his vision, as is revealed in the essay's subtitle: 'A Manifesto for Networked Things: Cohabiting with Pigeons, Aibos and Arphids'. In what follows, we explore in detail how animals are positioned in these two types of discourse.

Turkle and Paro

Often referred to as the 'Margaret Mead of digital culture', Sherry Turkle, a professor at MIT and trained clinical psychologist has become famous for her research on how technology is changing the way humans think, live and communicate. The essay considered here formed part of more than a decade of ethnographic fieldwork on human interaction with all kinds of digital creatures from smartphones to sociable robots. Turkle's essay traces a history of human

enthusiasm for interacting with computer-generated creatures as though they were alive. She begins with Eliza, a computer program developed in the 1960s that simulated the conversational responses of a psychotherapist and was disturbingly popular with students, some of whom, Turkle mentions, wanted to be alone to talk with the program. As technology has advanced, new types of robots have appeared that possess increasingly sophisticated capacities for imitating human emotion and intelligence. Turkle describes the success of such robot technology with children, who form bonds with their Furbys and Tamagotchis, treating these artefacts as though they had interior lives, even when they are shown the toy's inner workings. But it is not just children who are susceptible. Even the researchers at MIT's famous technology lab are not immune. Turkle notes the real grief felt by Cynthia Breazeal, the chief designer of Kismet, a robot head designed to mimic the behaviour of a two-year-old, when her work with the robot came to an end after she had developed 'what might be called a maternal connection with Kismet' (509). Turkle persuasively points to the risks of such one-sided relationships with artefacts that cater to our narcissism by mirroring our moods and feeding our desires. Perhaps there will come a time, she suggests, when 'human relationships will just seem too hard' and people will prefer robots to the messy and always 'resistant human reality' (514).

One place these concerns come to the fore is in the use of robots developed as companions for elderly people in nursing homes. Turkle focuses on Paro, a Japanese robot shaped like a baby seal with multiple sensors that allow it to simulate interaction, sensing moods through how hard it is stroked, making expressive sounds and moving its head to follow its human owner and sustain eye contact. The Paro is already in use in nursing homes in the US, Australia and Japan and sufficiently well known to be featured in an episode of the Netflix comedy *Master of None*. One of Turkle's subjects, an elderly woman called Ruth, is visibly consoled by stroking Paro, imagining that the robot seal shares her sadness:

> Ruth, depressed about her son's abandonment, comes to regard the robot as being equally depressed. She turns to Paro, strokes him, and says, 'Yes, you're sad aren't you. It's tough out there. Yes it's hard'. Ruth strokes the robot once again attempting to comfort it, and in so doing, comforts herself. (511)

Turkle voices a number of important issues – might such robot companions replace human contact, serving as an excuse for relatives not to visit? Is the illusion of understanding that Ruth acquires from her pet robot of value? Shouldn't we in fact prefer the relationships that Turkle

christens as 'authentic' – those with humans where the capacity for genuine understanding and reciprocity exists? In Turkle's widely viewed TED Talk she is more forthright about the problems she sees in therapeutic robots like Paro and the illusory comfort they give to women like Ruth:

> That woman was trying to make sense of her life with a machine that had no experience of the arc of a human life … during that moment when that woman was experiencing that pretend empathy, I was thinking, 'that robot can't empathize. It doesn't face death. It doesn't know life'.

Rereading these arguments through the lens of animal studies however, it is striking how much of Turkle's argument rests on an unquestioning view of animals themselves. Importantly, many of the reasons Turkle gives to explain why interactions with robots cannot count as real would also disqualify our relationships with animals. If a robot has no experience of the arc of human life, neither does a dog, whose arc is so much shorter and whose sense of mortality or life is likely to differ from humans. If the criteria for authentic love, caring and empathy in a relationship is the capacity to reciprocate those emotions in ways humans recognise, then a bewildering multitude of human relations with nonhuman animals would fail to measure up. A number of humans would also fail on these criteria, people with mental illness or disability as well as those people who for other reasons fail to reciprocate love. Turkle emphasises that humans have at least the capacity to care, even if it is not exercised: 'We can be disappointed in people, but at least we are disappointed about genuine potential. For robots, the issue is not disappointment, because the idea of reciprocation is pure fantasy' (505). If this manoeuvre seems familiar, it is because humanists have made these arguments before to defend the frontier between humans and animals. The attempt to distinguish humans from animals through the identification of uniquely human characteristics such as rationality, intelligence or language has often resorted to claims about 'potential' to address the problem of the humans that would be excluded. Turkle's efforts to shore up the border between humans and robots are based on love, rather than language or rationality. But the problem of defining love in ways that exclude too many beings remains.

The parallels become especially pronounced as Turkle advocates for a return to the early days of artificial intelligence when 'people were much more protective of what they considered to be exclusively human characteristics … people … drew a line in the sand.

Machines could be cognitive, but no more' (512). Paraphrasing Marvin Minsky's early definition of artificial intelligence as 'the science of making machines do things that would require intelligence if done by people', Turkle suggests that when it comes to this new breed of sociable robots simulating emotional intelligence, we should be precise in our attributions, saying that 'The robot is exhibiting behaviour that would be considered caring if performed by a person (or perhaps an animal)' (512). The language here is remarkably close to the way in which Jane Goodall was instructed by her professors at Cambridge how to hold the line between humans and chimpanzees. When Jane Goodall as a new PhD student attempted to say that a chimpanzee she was observing exhibited jealousy, she recalls that her mentor Richard Hinde was adamant that such anthropomorphisms would not be respected as scientific. Hinde instead advised Goodall to use the same careful phrasing that Turkle prescribes for talking about robots, 'I suggest you say that Fifi behaved in such a way that if she had been a human child we would say that she was jealous' (Goodall).

When Turkle echoes this instruction in the case of robots, she groups animals with humans in their capacity to love, a testament to how much Goodall and other ethologists have succeeded in challenging the idea that the full spectrum of emotion belongs to humans alone. But Turkle places animals in parenthesis, qualifying their status with a 'perhaps'. The uncertainty expressed by 'perhaps an animal' reflects the ambivalent position of animals in this discussion. Nonhuman animals cross and recross the boundary that Turkle is trying to install, as at times in Turkle's account they are grouped with humans as living creatures and at times with inanimate objects. In a revealing moment Turkle refers to the new generation of robots as seductive because of the ways they are able to simulate behaviour that 'pushes our Darwinian buttons' (2007, 511). The metaphor perfectly captures that ambivalence, mixing a Darwinian perception of animals' capacity for emotion with a Cartesian view of animals as nature's automatons – and at the same time exposes an underlying anxiety about what our proclivities for bonding with robots reveals about *us*.

The discourse of human exceptionalism that Turkle promotes in order to resecure the border between robots and humans is problematic for humans and devastating for nonhuman animals; the idea of unique characteristics that gives humans exclusive rights to freedom from pain and death continues to rationalize untold suffering and horror in the treatment of nonhuman animals. Regardless of the position one takes on the human robot interactions, the establishment of such narrow parameters for authentic relationships has significant implications

for how we perceive and value human animal relations and it is an important reason why discourse surrounding robots and the internet of things matters for animals.

There are also pragmatic reasons to make nonhuman animals part of the conversation on the ethics and social impact of robots. The ethics of using therapeutic robots such as Paro to substitute for human companions raises one set of questions, but the ethics of substituting robots for therapy animals raises quite another. On the one hand the recruitment of animals for animal-assisted intervention programs in nursing homes and prison programs liberates a number of dogs from shelters. Approximately half of animal-assisted intervention agencies use dogs from shelters (Serpell et al.). On the other hand, research on the welfare of therapy animals points to a number of problems in the care those animals receive. The organisers of such programs rarely have the training in animal care to be able to identify signs of stress and illness in the animal (Serpell et al.). Many species that are used as therapeutic companions are unsuited, such as parrots who have recently become a popular choice for residential homes that are not set up to meet the specialized needs of avian species (Anderson et al.).

In Alexis Elder's discussion of robot companions for geriatric care, he notes that the use of pet robots insures that people suffering from mood swings or poor impulse control will not hurt a living animal (92). But if a person abuses a robot animal, is nothing being hurt? What if such behaviours with something that looks like a dog influence how real animals are treated? In a recent discussion of the legal extension of personhood to robots, Marc De Leeuw suggests that as robots start to resemble humans ever more closely, it is important to treat them *as* humans in order to preserve the norms regarding how living people should be treated. On the other hand, in light of the abuse that living people too often receive, it might be safer to ask people to treat a robot like a robot, on the grounds that an expensive technological device would be better treated than many living creatures and one might extend that argument to robots modelled on pets as well.[33]

For Turkle, '[t]he question is not whether children will love their robot pets more than their real pets, but what loving itself will come to mean' (514). We argue that both kinds of questions are relevant to nonhuman animals. One of the children waiting in line at the Darwin exhibition would have preferred a robot turtle to a living one because 'Its water looks dirty, gross' (513). If Turkle worries that there are hard, messy realities that will cause humans to prefer robots to relationships with other humans, there are as many if not more reasons to

worry about how robots might affect the choice to have a real dog, given the breeding programs already in existence aimed at producing dogs who do not shed their fur or otherwise inconvenience humans.

Designing an Internet of Things with animals

Like Turkle, Julian Bleecker does not shy away from mess; his manifesto for things actively embraces it, seeing the Internet of Things as a way to thicken up human communication with the 'messy imbroglio' of 'transspecies dialogue'. Bleecker's manifesto bears the hallmarks of design fiction writing on 'ubiquitous computing', the subject of an influential article by Mark Weiser published in 1991. Weiser argued that in the twenty-first century, computer technology would become as commonplace as writing technology, embedded invisibly into the human environment, unobtrusively present in the form of (for example) tiny tabs that would turn windows, walls or car mirrors into communication surfaces and information sharing devices. Weiser hoped that ubiquitous computing would liberate humans 'holed up in windowless offices before glowing computer screens' (102) by seamlessly integrating computers with human lives, making computers invisible parts of human interaction rather than a barrier to it. The idea of ubiquitous computing also hoped to free humans from the problems of information overload. As Weiser explains:

> There is more information available at our fingertips during a walk in the woods than in any computer system, yet people find a walk among trees relaxing and computers frustrating. Machines that fit the human environment instead of forcing humans to enter theirs will make using a computer as refreshing as taking a walk in the woods. (102)

Weiser's essay manifests many of the features that are typical of design fiction ideology, such as the promise that technology will liberate humans without harming the status quo or in any way unsettling the political and social arrangements of the present (Gonzatto et al.). All of Weiser's ideas of transforming how we use computers are wedded to the corporate structures of work that characterize the present (Bell and Dourish). Indeed, Weiser is open about the fact that his vision of the future 'will enable nothing fundamentally new, but [makes] everything faster and easier to do' (100). Yet in inviting us to imagine a world where using a computer is 'as refreshing as taking a walk in the woods', Weiser's vision holds out the alluring possibility of healing the rift between humans and nature.

Bleecker's design fiction published as a manifesto on the Internet of Things in 2006 goes Weiser one better. Set like Weiser's vision in the proximate future, the manifesto is unabashedly utopian in his hopes for the Internet of Things. Bleecker describes his manifesto as some 'scribblings' that emerged from a workshop held at the Near Future Laboratory he cofounded. The manifesto was first published on a blog with a note that the piece is unfinished. The essay is written in the headlong, enthusiastic and provocative style of someone intent on getting his ideas down fast. Yet although it reads in part like a draft, the manifesto is widely cited by scholars and was reprinted in Routledge's collection of key articles and classic debates on the 'object' (Candlin and Guins).

A definition formulated by the cluster of European Research Projects on the Internet of Things clarifies the way this emerging technology shifts our understanding of what 'things' are:

> 'Things' are active participants in business, information and social processes where they are enabled to interact and communicate among themselves and with the environment by exchanging data and information sensed about the environment, while reacting autonomously to the real/physical world events and influencing it by running processes that trigger actions and create services with or without direct human intervention. (Mueller et al. 161)

For Bleecker, the new capacity of things to use and exchange information without human intervention carries with it an opportunity to turn a whole variety of nonhuman entities from pigeons to pet robots into 'socially relevant actors' and even 'strong willed agents', with the capacity to effect change. Bleecker invites us to imagine a world in which all kinds of objects and creatures begin to speak up and participate in human conversations on the Internet. Imagine, he writes,

> Critter cams that disseminate a realtime video stream from a Kapok tree in the Amazonian rain forest or an RSS feed and podcast from a school of migrating whales showing all kinds of meaningful environmental data. What about video blogs from schools of dolphins and whales that will make it increasingly difficult to ignore the plumes of toxins in the oceans and the slaughter of their kin by whalers and felonious fishing fleets? What if automobiles had their say about their fossil fuel consumption?

In such possibilities, Bleecker sees the chance of 'the thick, contested and messy imbroglios of trans-species dialogue that lead to more habitable worlds'. As an example of the interspecies alliances for a better world that he envisages, Bleecker describes the 2006 project by Beatriz da Costa known as 'Pigeonblog'. Da Costa, an interdisciplinary artist and researcher at the University of California Irvine, worked with engineers, scientists and pigeon fanciers to equip pigeons with GPS enabled sensors and tracking devices so that when released they could measure pollution levels in the air above Los Angeles and stream these data to the Internet. Donna Haraway describes how the human collaborators on this project worked for a year to find a backpack sufficiently small to be comfortable for the pigeons and to ensure that the burden did not make them vulnerable to predators. Describing the project as a 'social public experiment between human and nonhuman animals,' Da Costa aimed to catch the imagination of the public, raise the profile of citizen science and point the way to collaborations between artists, scientists and nonhuman animals on projects such as pollution where all parties have a stake.[4]

Here is how Bleecker describes the PigeonBlog project:

Whereas once the pigeon was an urban varmint whose value as a participant in the larger social collective was practically nil or worse, the Pigeon that Blogs now attains first-class citizen status. Their importance quickly shifts from common nuisance and a disgusting menace, to a participant in life and death discussions about the state of the micro-local environment. Pigeons that tell us about the quality of the air we breath [sic] are the Web 2.0 progeny of the Canary in the Coal Mine.

Although Bleecker's manifesto seemed initially to place nonhuman animals, humans and things on the same playing field, hierarchies emerge very quickly. The pigeon's 'first class citizen status' is undercut by evaluations that rate the pigeon exclusively in terms of what it can do for humans, as the comparison to canaries in coal mines suggest, and it's a comparison that does not suggest a primary concern for pigeon well-being (despite the hunt for pigeon-sized backpacks) or pigeon intersubjectivity (pigeons do not think of themselves and each other as mere 'nuisances'). But even in its own terms, Bleecker's characterization of pigeons is inadequate, failing to recognize a long history of pigeon service to humans in the form of food, medicines and most famously as a method of long-distance messaging (Allen). Far from being just 'urban varmints' to humans, pigeons employed in their thousands in World War II saved the lives of

countless soldiers and were found to be better at search and sea rescue than humans thanks to their superior eyesight (Allen 27). It was in fact a photograph of a pigeon equipped with a camera in World War II that inspired Da Costa's project ('PigeonBlog').

Bleecker does not seem to know much about pigeons, but does he need to? He is after all a 'designer and engineer focusing on creating speculative objects hardware and software,' to quote from his online biography at *nearfuturelaboratory.com*, and one cannot be interested in everything. The point here is not to criticise Bleecker for a lack of information about pigeons, but to make a different argument about a missed opportunity.

One of the stated goals of this design fiction is to think about how the world might shift once objects and animals are participating in the Internet of Things: 'What difference do other blogging species have on how we understand how the world works, or how we work to change the world?' (Bleecker). Despite the rhetoric of change, there is no attempt to imagine the world from different nonhuman perspectives. If 'things now have a voice in the collective of human social exchange', the imagination of what they might say is resolutely anthropocentric, concentrated on human needs: 'Let the pigeons help us speak on the environment. Let Poultry get us to think seriously about a world where the H5N1 virus takes charge'. One of the ways in which *this* design fiction remains tied to the status quo is that human domination of animals remains untouched despite the egalitarian goals of creating more habitable worlds. The classes of animal that Bleecker mentions are those that are either in subordinate relations with humans – animals at Seaworld, pet animals, animals whose identity is subsumed by words such as 'poultry', animals threatened with extinction.

Sometimes Bleecker advances animals as models for thinking through what object agency might look like. He references the Pacific Northwest salmon and the spotted owl as examples of how the nonhuman world can shift humans about, rearrange space and redirect resources: 'Heck, most humans don't have the capacity to effect the kind of worldly change and receive the same order of protection, status and economic resources *as a fish*'. To select as examples of nonhuman agency two species that have been brought to the edge of extinction through human activities is an odd but revealing choice. It suggests that the presence of nonhuman animals in this context offers reassurance that a world of networked things will accommodate rather than endange human sovereignty, that it will like the 'poultry' and the fish still be a world designed for human consumption. At the beginning of his section on agency,

Bleecker notes that 'this isn't the Terminatory fantasy of machines with guns that run amok, acting against humanity'. The continued reference to animals in contexts where humans are dominant is one way of softening and domesticating the vision of smart objects who 'have no truck with the syntax of human thought' through rhetoric that unconsciously assures readers that these new kind of objects will continue to act like the subordinated nonhuman *animal* species we think we know.

Rethinking values

As Turkle suggests, new technologies are a chance to rethink our values: 'every new technology challenges us generation after generation to ask whether it serves our human purposes, something that causes us to reconsider what they are' (*Alone Together*, 285). The emerging technologies surrounding robots and the Internet of Things could also be a chance to rethink human relations with animals and the environment that shapes and is shaped by the pursuit of human interests. This essay has so far emphasised the harm that the frameworks developed for objects may do to animals as its main justification for making animals part of this conversation. But their absence is also a missed opportunity; scholarly work in animal studies has something to offer research on social robots and the Internet of Things given a mutual interest in learning how to live with the nonhuman.

For example, if one of the questions provoked by the 'robotic moment' is 'what loving itself will come to mean', this is a crucial question for researchers of the Anthropocene, as well. For those contending with the survival of species, these are 'times of extinction when even slight acquaintance can make the difference between preservation and callous disregard' (Tsing 6). Anna Tsing offers a glimpse of how we might rethink love. In her study of the passionate devotion aroused by the matsusake, a type of mushroom prized by the Japanese but impossible to cultivate, Tsing describes a new science studies 'whose chief characteristic is multispecies love' (Tsing 19). This kind of science trespasses freely across boundaries of science and art, amateur and professional, as the devotion to matsusake brings together eccentric hobbyists volunteers and natural scientists who share a 'passionate immersion in the lives of the nonhumans' (19). The type of love called for by the nonhuman in this context is precisely a kind of love that involves noticing, caring and creative intervention, without any reference to or presumption of reciprocity. Importantly the arts of inclusion that Tsing describes refuse to

observe boundaries between authentic nature and something artificial and man-made. For the matsusake thrived in the past through the conditions brought about by villagers' disturbance of the forests, the use they made of certain tree species for firewood that enabled the pine, a tree that favours matsusake growth, to proliferate. The programs to bring back matsusake involve what Tsing calls 'guided disturbance' rather than efforts to return nature to a pristine wilderness. From this perspective, rather than retreating to a position that quarantines authentic love as something humans do with each other, or that subordinates the nonhuman to human purposes, the Internet of Things might be a place to expand the types of attachments we value, recognizing that the unidirectional bonds we make with the lively objects and caring robots in our vicinity might train us for the potentially unreciprocated care and attention that the nonhuman environment requires of us.

Importantly, in critiquing Turkle's and Bleecker's papers we are not equating any lost opportunity for real love between humans and robots with the historical failure of humans to recognise love and empathy in and with nonhuman animals. The potential for love between humans and robots requires continued careful examination but we do not take a position on it here. What we are concerned about are the implications of IoT thinking for how animals experience their lives. We are particularly keen to avoid losing hard won ground in the social and legal recognition of nonhuman animals as having moral status, interests and genuine selfhood.

When theorists of human robot relations make love the benchmark of human exceptionalism and limit their ideas of love to those things humans can do and robots cannot, they exclude the entire spectrum of complicated forms of devotion, nurture and lifelong commitment across species lines. Our goal in bringing animals out of the wings and on to the stage of the discussions animating the field of robot ethics and smart objects is to understand how this discipline uses animals as part of its theoretical language in ways that help to normalize their suffering. But we also suggest that studies of animals and the environment carry possibilities for reimagining our relations with artefacts. Love cannot be just what humans do and others cannot. Let's allow the turtle in and broaden the conversation.

Notes

[1] More accurately it was a Galápagos tortoise, but as 'turtle' can be used as an umbrella term for the reptile order Testudines that includes tortoises, especially in the US, we use 'turtle' to be consistent with Turkle's text.

[2] The turtle at the exhibition discussed by Sherry Turkle was one of two males called Frank and Charlie. Although the reference here is partly figurative, the importance of keeping the real animal in view is critical to our argument, hence we refer to the turtle as 'him.' For more on the linguistics of individuation, see Moore.

[3] One could equally address pet robots from the perspective of those who challenge the ethics of keeping nonhuman animals as pets in the first place (Pierce).

[4] The original Pigeonblog website is no longer maintained. The quotation from the website can be found in the description of the project in the Online Companion to Art and Electronic Media. http://www.artelectronicmedia.com/artwork/pigeon-blog.

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