RESEARCH

It matters what designs design designs: speculations on multispecies worlding

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Critical contemporary discourses on extinction, climate change and planetary boundaries are needed to counter and reject our current ways of living on this planet. But they often end badly. Therefore, we also need to tell the stories that create openings and generate more desirable alternatives. This paper contributes to the effort of resituating design as less anthropocentric and much more of a multispecies affair. Following scholars such as Donna Haraway, Timothy Morton, Anna Tsing and John Law, this text does so by unpacking the notion of 'multispecies worlding' for speculative design practices that involve other living entities. By carrying multiplicities into design processes and rethinking how other species can become a more deliberate part of our (re)worlding efforts, this text articulates the importance of advancing decolonial design aims to generate interspecies harmonies rather than reinforcing oppressive relations. The annotated illustrations and examples of multispecies design projects that appear in this paper involve an additional effort in identifying 'big-enough' stories and already existing multispecies design speculations. As such, this work offers merely one collection of enactments that can allow further worlding and further design work. Such a repertoire of speculative multispecies design work can thereby knot together different realities, from different actors, that can propose and embody other kinds of worlding relations between species. They thereby slowly but steadily break down existing grand narratives that seem all-explanatory to speculate about different ways in which humans and other species already make worlds together.

Introduction

We are situated in a time that some scholars have named the 'Anthropocene': an era of man–made environmental transformation and destruction (Crutzen and Stoermer,

2000). Some of us wonder, did the earth already reach a status beyond repair? In this time of mass extinction, the accumulation of capital feasts on death, and in doing so, devours all life (McBrien, 2016: 116). But it must be said, these narratives make everything look rather dim. It is quite easy to lose any hope for better futures by attaching to these dystopian worldviews. Likely the scenarios that are set out here are all true, but they also do not make space for any other truths. Therefore, according to Haraway, they are unhelpful stories to think with, because they all end badly (Haraway, 2016: 49). Especially for future makers and speculative thinkers who are trying to come up with positive or more desirable scenarios, the notion of the Anthropocene seems to be a trap: it presents a view of the world that is mainly concerned with humans and the environmental destruction that humans cause. It remains to be a human–centred story. 'The human social apparatus of the Anthropocene tends to be top-heavy and bureaucracy prone. Revolt needs other forms of action and other stories for solace, inspiration and effectiveness.' (Haraway, 2016: 49) And most of all: 'it also saps our capacity for imagining and caring for other worlds, both those that exist precariously … and those we need to bring into being' (Haraway, 2016: 50). In order to come up with alternatives to anthropocentrism, creators need narratives that help to create, imagine and speculate about other futures. Therefore, this text argues that a sole focus on concepts like extinction, death and anthropocentrism is paralysing for those that attempt to create conceptual and speculative spaces that inspire different possibilities.

In a discussion on the meaning of concepts, Gilles Deleuze and Felix Guattari (1994) argue that the activity of *doing* philosophy entails the *creation* of concepts, and turn philosophical thinking into something that is much akin to the creation of art. This understanding may fit well with a more speculative realm in which art, design and other forms of making are intertwined with doing philosophy and experimenting with, or performing, concepts. Notably, Deleuze and Guattari specifically focus their discussion on philosophical concepts, and not everyday concepts like chairs. The difference here is a focus on things that are a given; they point to something that denotes what exist (like a chair, a class of objects used for sitting) versus concepts that exist only when they are created (like 'Baroque'; see Smith, 2012: 65). In other words, the philosophical concept posits itself and its object at one and the same time. We can thereby wonder whether concepts like the 'Anthropocene' (or Haraway's proposal: the Chthulucene; Haraway, 2016) or 'anthropocentrism' denote what exists or are performed in their creation. In the latter case, the creation of such concepts can construct, isolate and materialise and thereby bring something into being. As Annemarie Mol writes in her book *The Body Multiple* (2003) with the example of the vascular disease known as atherosclerosis/es: the disease is subjective; it has a different relationship to the patient, the surgeon, the pathologist, and has many configurations. The becoming of the disease takes different forms, characteristics and meanings, depending on one's relationship to it. In other words, such concepts do not exist in vacuums, but are actively created and continuously enacted. In an attempt to overcome a sole focus on the 'Anthropocene', the human and the environmental destruction that humans cause, Haraway resituates our being in the realm of a much more encompassing 'multispecies' thinking. In particular, she uses the notion of 'multispecies worlding' as a concept for the collective world-making that all kind of living beings are involved in (Haraway, 2016: 105).

In this paper, I will further unpack this concept of 'multispecies worlding', experiment with its possible enactments, and subsequently align it to an evolving turn in the field of speculative design that can be described as 'multispecies designing'. The first section in this text offers an introductory reflection on the relations between design, speculation and 'negotiating possibilities'. After that, I articulate a close reading of the concept of multispecies worlding through the lens of scholars including Donna Haraway, Timothy Morton, Anna Tsing and John Law. I will then illustrate how speculative designers are already exploring multispecies worlding in various design practices involved with other species. The last part of this text, in contrast, expresses an important risk involved with such efforts. With a focus on the notion and practices of 'speciesism' (or animal oppression), I will illustrate how our attempts to broaden perspectives of world-making to involve other species can be used to silence or bypass a long-established body of work that critiques the subordinate position that other animals suffer in almost all aspects of our lives together.

The annotated illustrations that accompany this text are not only included to offer pause and punctuation, but primarily function to extent a largely textual engagement with 'worlding' towards less language-oriented forms of thinking-with multispecies encounters. By illustrating narratives in which other species are involved with instances of world-making, I hope to show how 'multispecies worlding' is *already* part of our everyday lives together. In the conclusions of this text I will further reflect on this exploratory repertoire of 'multispecies worlding' as deliberately constructed depictions of already existing multispecies negotiations. Speculation, in this context, is thereby not defined as a practice of imaging that which does *not* yet exist, but rather as an activity that brings forth alternative worlds that are *already* real.
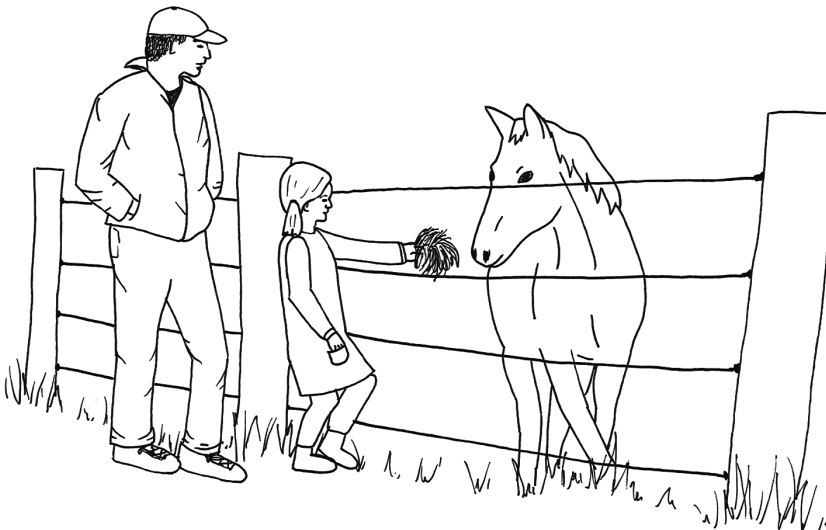
(Illustration refers to the work of Hook, 2019)[1]

It matters what designs design designs

Following from this discussion on the creation of less dystopian scenarios, the field of design is particularly engaged with creating openings rather than endings. Designers are trained to iterate on those kinds of designs that, rather than close-off possibilities, inspire other designs in turn. Thereby, rather than ending up with stories too big to negotiate with (such as 'the Anthropocene', arguably), or stories that are so small they are not taken seriously, according to Haraway, we should make stories [or designs] that are *big-enough* to 'gather up the complexities and keep the edges open and greedy for surprising new and old connections' (Haraway, 2016: 101). In other words, rather than designs that only critique the status quo, attempts to 'solve' problems that are too complex to fully encompass, suggestions for utopia that are unfeasible or entirely unimaginable, or proposals for dystopian despair with closed endings, the art of design and storytelling – with the goal to negotiate ideas for alternative futures – lies in the craft of creating possibilities. This statement aligns with the contemporary definition of design as an activity of negotiation, proposing alternatives, and doing ethics in practice that has evolved as a more balanced understanding of design over the last decades.

Traditionally design may be regarded as a problem-solving and exclusively human activity, especially in earlier reflections on the definition of design: 'changing existing situations into preferred ones' (Simon, 1969: 111), or 'initiating change in man-made things' (Jones, 2000: 4). These anthropocentric definitions, however, always pose the follow-up question of *whose* problems designers actually attempt to solve. Who has the power to change things? And whose problems are thereby created or ignored? Older definitions of design mainly focused on creating a world designed for particular users of interest and fit with design's historical roots in industrial, commercial and colonial contexts (see Tlostanova, 2017). This conformist approach to design has also been highlighted by Dunne and Raby in their *A/B Manifesto,* promoting a focus on design from being in the service of industry, production, consumer, user or application, towards servicing society, debates, citizens, persons or implications instead (Dunne and Raby, 2009). For example, concepts like user-centred design (see Norman and Draper, 1986), or human-centred design (see IDEO, 2011) still remain popular notions within design industries and research, where the end-user of a designed product or service is placed centrally in the design process. Further, the Scandinavian notion of participatory design has its historical roots in the idea that the stakeholders must be allowed to take part in and influence different stages of the design process (Lindström and Ståhl, 2014: 318). However, these design perspectives are now also charged with feminist, eco-centric and post-colonial critiques that state that the role of the designer and participants (such as users and stakeholders) is often unfairly distributed with regards to the power that the designer actually has over the design process and outcomes (see Hillgren et al, 2016; Decolonising Design, 2016; Keshavarz, 2018). The designers determine who is considered a stakeholder of interest, the targeted user or the ones allowed to articulate their perspectives. Additionally, many design fields are almost exclusively built on the assumption that design is something that only concerns humans. In contrast, contemporary definitions of design are nowadays further expanded towards broader and more encompassing ideas such as: regarding design as a series of negotiations (Highmore, 2009: 4), negotiated

achievements (Feenberg, 1995: 9), and as a process of negotiation with the given, which extends the boundaries of the previously possible (Dilnot, 2005: Chapter 4, para. 2). According to interaction design scholars Jonas Löwgren et al (2013), design entails changing situations, exploring possible futures, framing situations and creating proposals in parallel, thinking through sketching and other tangible forms of mediation, and addressing instrumental, technical, aesthetic and ethical qualities all at the same time. In this understanding, design practice may become a particularly suitable process to produce and experiment with a variety of perspectives that can help us speculate and generate alternative ideas.

What becomes clear through these more contemporary definitions is, first of all, that design is also a verb: to design. Design-ing implies an active process of making, constructing or a deliberate unmaking of situations. Secondly, these definitions allow for an ethical dimension to design that involves a responsibility and accountability for the particular view that is put forward in design work: rather than attempting to design from an all-knowing, universal or problem-solving perspective, designers always propose views from somewhere (see Suchman, 2002: 96). This allows designers to acknowledge that design entails a particularly non-innocent activity. Thirdly, the recurring notion of design as negotiation means that there needs to be something to negotiate with; something needs to be at stake. Therefore, aligning with Haraway, badly ending stories are difficult to design with, because instead of inspiring new ideas, grand narratives with bad endings rather paralyse designers and other future makers. They cause a critical lack of imagination in coming up with other outcomes, or – alternatively – they require us to stop caring at all and fall into despair. Instead, more generative inspiration for design emerges from our existing engagements with the world and the perspectives designers (often unconsciously) already assume: our worldviews (Redström, 2017: 96–7). New ideas are shaped around ideas we already have. This makes it crucial to consider and question those initial perspectives that we use to design with; as Marilyn Strathern wrote, 'it matters what ideas we use to think other ideas' (Strathern, 1992: 10). Further expanded by Haraway:

> It matters what thoughts think thoughts, it matters what knowledges know knowledges, it matters what relations relate relations, it matters what worlds world worlds. It matters what stories tell stories. (Haraway, 2016: 35)

In the same vein, a design orientation of this statement could add: *it matters what designs design designs*.

With this extension I mean that in order to engage in 'multispecies worlding' in design, we need to start from those kind of designs – thoughts, knowledges, relations, worlds and stories – that can inspire those ideas in the first place. Haraway emphasises that for finding these 'big-enough' stories [or designs] we have to relearn how to conjugate worlds with partial connection and not universals and particulars (Haraway, 2016: 13). Rather than looking for universal truths, or predicting particular outcomes, we thereby have to learn how to better negotiate with incomplete and unfinished relations that exist in the world. Even though Haraway does not address designers specifically, the message is clear: constructing alternative, more hopeful, futures require us to create more inspiring narratives.

Multispecies worlding

This quite open-ended understanding of designing requires us to be at ease with the uncertainty that these big-enough designs entail. Additionally, the involvement of other species in this negotiating of possibilities requires us to pay attention to the way other beings can take part in this open-ended process. To do this, I argue that it is useful to focus on Haraway's practice of 'worlding'. According to Haraway, the articulating of partial connections is a practice of worlding; more precisely, with regards to our relations with other species (including bacteria, fungi, and all other 'critters'), Haraway advocates for the notions of 'sympoietic worlding', or 'multispecies worlding' (Haraway 2016: 76, 105), where ordinary stories, such as merely becoming involved in each other's lives, becoming entangled, propose ways to stay with the trouble in order to nurture wellbeing on an already damaged planet (Haraway, 2016: 76) and to help open passages for a praxis of care and response – response-ability – on a wounded terra, Not as stories of heroes, but as tales of the ongoing (Haraway, 2016: 105). Haraway thereby proposes to pay special attention to the everyday 'multispecies worlding' practices that humans are already engaging in together with other life forms on this planet. This is exactly where new stories, knowledges, thoughts, relations, worlds and designs are formed. To further understand what this 'multispecies worlding' can entail, it is useful to further unpack the notion

of worlding with regards to animals and offer perspectives from other theorists that have engaged with this topic.

When reflecting on existing scholarship that attempts to align 'worlding' with other animals, Heidegger's work is often cited. In his 2008 book *Zoographies: The Question of the Animal from Heidegger to Derrida*, author Matthew Calarco outlines a thorough philosophical analysis on the – by now quite controversial – history of animality, mostly built around the idea that humans are a special kind of animal. Ideas of 'worlds' play a prominent role in his analysis of Heidegger. According to Calarco, with 'world' Heidegger does not mean 'nature' or 'environment', but instead signifies 'the place in which the Being of beings comes to unconcealment' (Calarco, 2008: 50). A possibility that – for Heidegger – only humans have, because they are the only beings that can access other entities within their own being, they are 'world-forming' (Calarco, 2008: 50). According to Heidegger, stones are worldless, animals are poor in the world, and humans are world-forming (Calarco, 2008: 20). Important to add here (and often left out or misunderstood in other critiques of Heideggerian scholarship), however, is that Heidegger also argued that it is counterproductive to compare these differences between animals and humans in hierarchical forms (Calarco, 2008: 21). Rather, the world-relations of animals should be examined in a way that is 'appropriate to each *kind* of being' (Calarco, 2008: 22). In other words, not through notions acquired from human psychology but rather by taking a look at animality itself and finding out what being poor in the world means on animality's own terms (Calarco, 2008: 22). Although Heidegger here attempts to break with a humanist philosophical tradition that only examines animality based on what kind of traits or capacities are lacking in other animals (separating humans from other animals in reductive and essentialist terms; see Calarco, 2008: 4), at the same time, he is charged with one of the most classical and dogmatic of philosophical prejudices, by never really questioning whether a distinction between human beings and animals (in their ways of being in the world) can or even should be drawn in the first place (Calarco, 2008: 23). In his later work, Heidegger also acknowledges that even though his analysis was set out to understand the animal's relation to the world on the animal's own terms, 'this very project gains a sense and direction only from an anthropocentric perspective' (Calarco, 2008: 28).
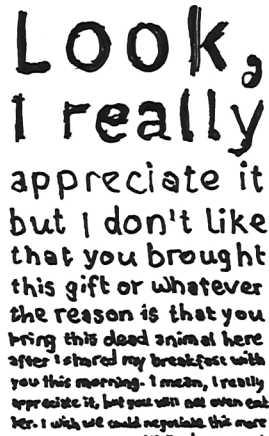
Object oriented philosopher Timothy Morton further critiques Heidegger's concept of 'world' – or 'human worlding' – and claims that the notion of 'world' only works if we allow non-humans to have it (Morton, 2017: 91). This does not only mean that cats can have a world, but also waterfalls (Morton, 2017: 91). Rather than trying to raise animals and objects to a Heideggerian human status, he turns the tables by saying that a 'world is only ever something you can be poor in' (Morton, 2017: 91). According to Morton worlds are not rigid, solid, complete or require a conscious understanding of having one, but they are always perforated, cheap, overlapping, broken, and above all they are shared (Morton, 2017: 91–3). So, it is not that humans cannot understand animals, we actually can, at least to a certain degree, not because we extend our worlding capacity towards theirs, but because our worlds are perforated: 'we don't quite understand *ourselves*, either' (Morton, 2017: 93). Morton echoes once again (similar to Haraway) that 'world' is a verb

– 'worlding'. You get on with things, and your world emerges from this getting on (Morton, 2017: 93). I think that Morton best (but perhaps still confusingly) summarises the meaning of world by claiming that '[w]orld is the noise your behavior makes' (Morton, 2017: 94).

Similarly – but from a more feminist Science and Technology Studies (STS) theoretical perspective – the terms 'worlds' and 'worlding' as used repeatedly in the work of Haraway are also coined as a deliberate distancing from Heideggerian scholarship; she writes:

> Finished once and for all with Kantian globalizing cosmopolitics and grumpy human-exceptionalist Heideggerian worlding … Never poor in the world, Terrapolis [Haraway's term for SF stories (including science fiction, speculative feminism, science fantasy, speculative fabulation, science fact, and string figures) for multispecies worlding] exists in the SF web of always too much connection, where response-ability must be cobbled together, not in the existentialist and bond-less, lonely, Man-making gap theorized by Heidegger and his followers. Terrapolis is rich in the world, inoculated against posthumanism but rich in com-post, inoculated against human exceptionalism, but rich in humus, ripe for multispecies storytelling. … It matters what stories make worlds, what worlds make stories. (Haraway, 2016: 11–12)

Admittedly, at times it can be confusing to understand Haraway's textual compositions, but there seems to be a difference here with Morton's approach, namely, that for Morton, everything is *always* poor in the world, and for Haraway, multispecies worlding is *never* poor in the world. Both propositions sound like exciting and important breaks with traditional anthropocentric ways of thinking about worlds, and at times it even becomes difficult to see their differences. Here, however, with 'multispecies worlding', I focus on the *shared* aspect of the always ongoing practice of worlding – between humans, other animals (and for Morton also non-living things) – that both theorists emphasise. Whether or not that is rich or poor simply depends on the currency one uses to evaluate those temporary worlds that are constructed. For example, anthropologist Anna Tsing, building onto the work of Haraway and ecologists' usage of the notion of *assemblage*, illustrates the shared-ness of world-making among non-humans by exemplifying that beavers make worlds by re-shaping streams, plants live on land because fungi made soil by digesting rocks, bacteria made our oxygen atmosphere while plants maintain it: in other words, each organism changes everyone's worlds as they overlap (Tsing, 2015: 22). And thus, when Haraway writes that it matters what (multispecies) worlds world worlds, I read this as an argument towards paying more attention to how humans *and* other animals continuously make, share, break and give form to worlds. Not only in design practices, but especially also in mundane everyday life. Not only in terms of suffering, but also – and perhaps most importantly – for finding ideas to continue worlding in other, more multispecies, ways.

To be able to take the practice of worlding seriously for both humans and other animals, however, it is necessary to understand that, for scholars like Haraway and Morton, there is no one single world, but there are many worlds and many entities that make these worlds. Essentially, this means that if humans want to engage in multispecies worlding practices, we need to train ourselves to respond to – and engage with – the world-making of other species. It is not enough to acknowledge that other animals have worlds, and thereby influence our worlds, according to both Haraway and Morton, humans also need to acknowledge their own worlding practices and recognise the full extent to which animals continuously engage and respond to us. Moreover, by learning to acknowledge and listen to the world-making efforts of other entities, we engage in a much more continuous relationship with other living beings. Regarding the worlds of other species, Tsing, argues that 'we are surrounded by many world-making projects, human and not human' (Tsing, 2015: 22) and notes that 'every organism makes worlds; humans have no special status, … [and] world-making projects overlap' (2015: 292). Thereby, it is only by paying attention to the world-making practices of other animals – and respectfully responding to them – that a 'multispecies worlding' framework can arise.

To help understand this move towards a pluralist worlding scenario further, sociologist John Law offers a post-colonialist argument towards a many-world world starting by outlining the difference between what he calls 'European or Northern' metaphysics and those of 'Aboriginal people':

in a European or a Northern way of thinking the world carries on by itself. People don't *perform* it. It's *outside* us and we're *contained* by it. But that's not true for Aboriginal people. The idea of a reified reality out there, detached from the work and the rituals that constantly re-enact it, makes no sense. Land doesn't *belong* to people. Perhaps it would be better to say that *people* belong to the land. Or, perhaps even better still, we might say that processes of continuous creation redo land, people, life and the spiritual world altogether, and in specific locations. (Law, 2011: 126)

The issue is that a European or Northern response to other ideas about reality is 'metaphysically self-contained' (Law, 2011: 128). The idea of a one-world metaphysics is continuously enacted and confirmed by various social, political, scientific or religious domains (Law, 2011: 131). As he wrote in an earlier text, everything that is not clear to us is, at least in principle, susceptible to clarification through those domains, we can discover 'it', and learn about 'it' (Law, 2004: 127, 137). Modernity has firmly placed itself in our society as an indefinite producer of 'technologies of truth' (Law, 2011: 131) in which a singular narrative confirms and reassures itself in daily life. For example, if both of us have a different idea about something (that exists out there), we can endlessly discuss it through various domains (socially, politically, scientifically or religiously), assuming that there is a single answer, and that if anything, we simply can produce different perspectives on that truth: 'It ends by authorizing a single account of out-thereness.' (Law, 2004: 122). Following authors like Bruno Latour, Steve Woolgar and Annemarie Mol, Law argues that this is a misunderstanding (Law, 2004: 131–2) and we should shift to an understanding of a many-world world (Law, 2011). This view, also inspired by the Zapatistas of Chiapas' notion of 'a world where many worlds fit' (Womack, 1999: 303, Escobar, 2017: xvi), implies that worlds are always plural, possibly overlapping and contrasting each other. Anthropologist Tim Ingold alternatively describes this relationality as a meshwork made up of interwoven threads or lines, always in movements: a sentient universe in which everything is deeply relational and brings each other into existence (Ingold, 2011: 68).

The implications for designers – as well as other future makers – is that by looking at our practice as world-making in a world of many worlds, we can carry multiplicities as part of design processes. By never elevating one world (or one design) as the only possible outcome, designers can make space for big-enough stories that tell realness as emergent. Worlding thereby becomes an ungraspable, intangible, shared, plural, temporary, multispecies and perforated concept that we can never fully define, because it is not something rigid, fully understandable, or descriptive; instead, we can perhaps state that it is inherently speculative. Furthermore, speculative worlding does not only arise in our minds. For designers, this practice takes place through thinking with material worlds and giving form to possibility. Lastly, it is not only humans who engage in worlding. Although human beings are particularly skilled at undertaking philosophical activities to negotiate and reflect on different worldings, practices of multispecies worlding are not contained in human minds, but precisely involves seeing, listening to, and responding to other entities (see Zylinska, 2012, Driessen et al, 2014). This is what matters when *worlds* world worlds, and when *designs* design designs.

(Illustration refers to the work of Galloway, 2019)

Multispecies worlding as speculative design practice

Over the last decades, numerous designers and artists have explored the realms of multispecies speculations in their practices. Designer and researcher Alan Hook, for example, was not particularly fascinated with horses at first. Still, when his children became friends with the horses in the wastelands behind their house (they were subsequently named Grassy Stripes and Captain America) and grew concerned about their daily lives, Hook got inspired to spend several years on a prototyped horse-head that matches a horse's vision, with the aim to make humans better understand what it could be like to be a horse. The project acknowledges that the subjectivity of a horse is much more individual and ungraspable than a human could ever understand, but it poses a counternarrative to the often positivist and data-driven methods of designing for other species (Hook, 2019: 160). Another experiment with interspecies subjectivity was carried out by designer Thomas Thwaites, aka 'GoatMan'. In his book, Thwaites states that he wanted to take a vacation from the stress of human life, by living in the Alps as a goat for some days (Thwaites, 2016). He developed a set of prosthetic limbs, a frame, a helmet and a grass-digesting external stomach, and spent three days in the Alps with a flock of goats. These types of projects demonstrate how speculations are made possible through technologically mediated relations. When humans engage in these activities, we do not necessarily approach a particular species-specific subjectivity of other animals, but we recognise different ways to respond to the animality that we already share with each other.

Besides designs that explore what it could be like to be another animal, another category of speculative multispecies design involves interspecies playfulness. Examples include participatory design with dogs engaged in watching TV (Hirskyj-Douglas, 2017), prototyping and testing touch screen games for sheltered orangutans (Wirman, 2014), robotic toys to explore the 'becoming-with' between humans and domestic dogs (Westerlaken and Gualeni, 2016), 'research through design' experiments for

playful artefacts in the context of elephant enrichment (French et al, 2015), and prototyping games for farmed pigs (Driessen et al, 2014). By looking at multispecies worldings through playful encounters with another animal, the designers wilfully start paying attention to what other beings do, and in turn respond to the negotiations of other species. These projects illustrate how other species are continuously drawn into exploring, manipulating and anticipating the things around them and thereby engage in design negotiation together with the human designers.

Multispecies design has not been limited to speculations with other mammals, but has also involved smaller animals and other species. Designers and researchers Kristina Lindström and Åsa Ståhl, for example, explored our complex entanglements with worms through speculations about composting and eating. In their project called 'Plastic Imaginaries', they invited participants to experience the capability of common mealworms to biodegrade Styrofoam. The participants were invited to bring back stories and speculations into a follow-up discussion on the mealworms potentially becoming part of a multispecies labour force (Lindström and Ståhl, 2016: 42–3). Artists Matt Kenyon, Doug Easterly and Tiago Rorke have also explored our yearnings for care and nurture in domestic cohabitations with micro-ontologies in their project 'Tardigotchi' (Swamp, n.d.). This project involves a hybrid object oscillating between a virtual pet, a game interface and an actual tardigrade that lives within the device and probes the possibility for humans to obtain emotional attachment or affection to biological and virtual lives (Swamp, n.d.). Additionally, the work of artist Christina Agapakis has speculated with bacteria living on humans as starter culture to make cheese, with the goal to rethink relations between humans, bacteria and biotechnology (Agapakis, n.d.). Such projects engage with the multispecies worldings of smaller organisms to rethink anthropocentrism and they propose speculative design practices to tell big-enough stories about micro-ontologies.

Lastly, other design researchers are exploring our cohabitations with animals in the context of multispecies scenarios for living with farm animals. Such is the aim of design anthropologist Anne Galloway: to find ways to live well, eat well, and kill well, in becoming part of a flock of sheep (Galloway, 2019). For Galloway, the flock is a continuous speculation on alternative ways of living with other animals in stepping away from anthropocentrism without making humans and animals equal; thereby she 'imagine[s] what we might owe "others" under the best and worst circumstances' (Galloway, 2019: 203). These material speculations of our cohabitations with other species, as well as the other examples of multispecies design briefly mentioned here, advance theories and observations on multispecies worldings into the complex entanglements in our everyday lives.

However, important questions to ask here, to situate these projects in a multispecies worlding perspective, are related to how other species were involved in these speculations. How were the designs created from multispecies engagements? How were the animals or microbes 'invited' to tell their stories? How did other species participate in the worldings from which the designs were inspired? How do the designs respond to the multispecies worlds they arise from? Because how do efforts to engage with 'multispecies worlding' as a practice in art and design manifest themselves in such projects?

These questions are almost impossible to answer because the meshwork of relations between designers, other species and the artefacts that were iterated on is often highly complex, undocumented or impossible to reveal or demonstrate. Nonetheless, many

of these projects – though motivated from the attempt to create more desirable futures – arguably remain situated within so-called 'speciesist' norms, frameworks, and assumptions (as I will further detail in the next section of this text). Once humans gain speculative insights into the lives of other species through these material explorations and engage in each other's worlding practices, rather than proposing design artefacts as outcomes, it is crucial to continue responding to how other species propose to *live with us* as well. This does not end when the design project finishes, but involves ongoing negotiations. It is thereby important to world worlds and tell big-enough stories in a way that does not downplay the suffering that humans inflict on other animals. Because at times it can be tempting to use Haraway's worldly techniques for storytelling to cover up the big issues that are at stake, for 'hedging around ethical questions' (Zylinska, 2012: 208), or to propose an attractive re-telling that further romanticises the subordinate position that animals almost always occupy in our societies (see Weisberg, 2009). In worlds were animals are oppressed on an all-encompassing scale, designers must ask what the notion or understanding of 'multispecies worlding' actually does for the species who are involved in our designs.

Anti–speciesism and multispecies design

As mentioned earlier, in a discussion on the meaning of design, western-centric and industrial design traditions are, over the last decades, slowly becoming more engaged with challenging the racist-, sexist-, colonial- and other kinds of oppressions that are often involved in design processes and outcomes. Feminist and decolonial design initiatives have questioned the roles that marginalised individuals continue to play in contemporary design approaches:
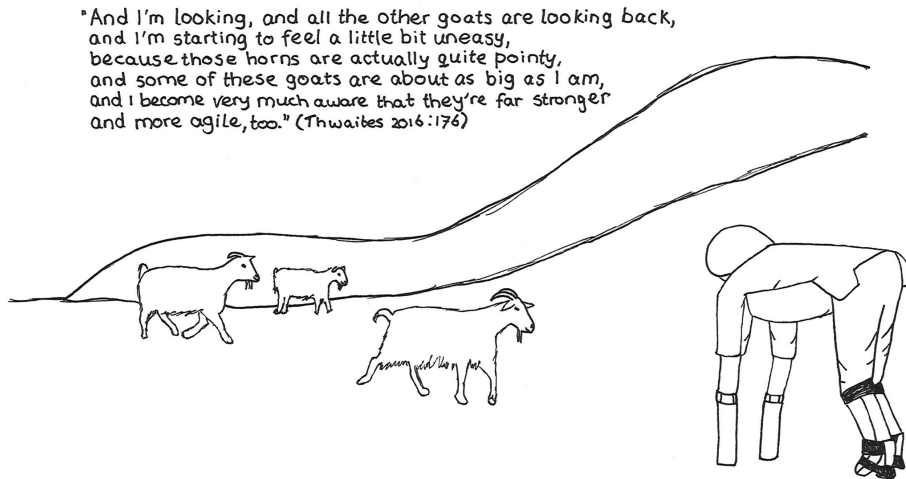
> We believe that a sharper lens needs to be brought to bear on non–western ways of thinking and being, and on the way that class, gender, race, etc,. issues are designed today. We understand the highlighting of these issues through

practices and acts of design, and the (re)design of institutions, design practices and design studies (efforts that always occur under conditions of contested political interests) to be a pivotal challenge in the process of decolonisation. … [W]e hope that we can make a substantial commitment to contributing to the continued existence, vitality and diversity of human presence on this planet. (Decolonising Design, 2016: para. 4, 10).

Within the context of multispecies design or speculation, these remarks remain fundamentally important and a widening of non-western ways of thinking and being extends and enriches the work of the theorists and designers who appeared in this text. But these efforts must also be supplemented with a similar critique of our oppressive relations with other animals. Speciesism, arguably the most systemic, deadly and all-encompassing form of violence that currently exists, is largely justified and normalised through the premise that certain species (such as humans) are inherently more morally worthy than others (Singer, [1975] 1990). In the field of Critical Animal Studies, as well as certain branches of ecofeminism, political theory, animal ethics and posthumanism, the normalisation of speciesism has been questioned and analysed (Nocella et al, 2014; Meijer, 2019). The body of academic and activist work that advances anti-speciesist discourse is growing and this increasing awareness of oppressive practices and their environmental consequences provokes discourse in areas such as politics, law, ecology, ethics and design. All of these areas are concerned with the production of knowledge and frameworks that can challenge the currently existing speciesist norms that dominate contemporary societies. The expanding analytical work that critiques animal oppression produces important understandings regarding the systems through which speciesism is constructed, normalised and maintained in almost all areas of society: for example, by uncovering speciesist practices in media (Merskin, 2015), geographies (Wolch and Emel, 1998), education (Andrzejewski et al, 2009), and politics (Meijer, 2019), as well as identifying the intersectional relations between speciesism and other forms of oppression such as racism (Spiegel, 1996), sexism (Adams, [1990] 2015), classism (Hribal, 2007), and colonialism (Armstrong, 2002).

Continued human flourishing on this planet is thereby not the (only) goal of truly anti-speciesist efforts towards multispecies design, but instead such an approach focuses on larger ecosystems flourishing, dismantling institutions of animal oppression, and promoting interspecies harmony. In an orientation towards multispecies design, to avoid reproducing the speciesist status quo (and thereby reinforcing its oppressive dynamics), the world-making of other species has to be taken seriously, cared for, and responded to if we want to avoid silencing the other (see Westerlaken, 2020). In our multispecies design efforts that help us get closer to other animals and gain speculative insights into what it is like to be a horse or a goat, designers must not stop after finishing the design or documenting the artefact. These designs can instead inspire us continue to respond differently towards the horses and goats that are actually farmed, slaughtered, subjected and exploited on massive scales. Similarly, designing artefacts that enable humans and other species to meet each other in play can either remain entertaining and profitable past-time activities with our pets, or it can help humans speculate about the agencies, the creativity and the preferences that domestic or captive animals tell us about when we respond to each other in playful contexts. Further, design reflections on the world-making with living entities at large, including plants,

rivers, bacteria and fungi, can not only demonstrate technological possibilities but also invite humans to become more practically aware of how we are interconnected with the earth and all its living beings in our everyday lives together. Lastly, while there may not be any unanimous answers on what could be regarded non-speciesist agricultural practices, it may be questioned whether multispecies worldings can indeed involve instrumental relations with animals that include slaughtering them. And when stories tell stories, or designs design designs, these are the multispecies worldings that either reproduce the status quo or help to generate more desirable futures for all species involved.

"And I'm looking, and all the other goats are looking back,
and I'm starting to feel a little bit uneasy,
because those horns are actually quite pointy,
and some of these goats are about as big as I am,
and I become very much aware that they're far stronger
and more agile, too." (Thwaites 2016:176)

(This illustration refers to the work of Thwaites, 2016).

## Concluding: multispecies designs that design designs

In this text, I argued that speculations for multispecies worlds do not emerge from critique, rejections of current ways of living, or stories of despair, but by creating the stories and concepts that generate alternatives. This means that humans need to actively construct worlds and concepts to think with, and designs to further materialise what we are thinking. Following scholars such as Haraway, Morton, Tsing and Law a speculative design practice of multispecies worlding helps us to express more desirable alternatives, not as all-encompassing solutions, but by carrying multiplicities into the design process and rethinking how other species can become a more deliberate part of these (re)worlding efforts.

This text articulated a possible meaning of 'multispecies worlding' in relation to multispecies speculative design and emphasised the importance of advancing decolonial aims to generate interspecies harmony rather than reinforce oppressive relations with other species. The annotated illustrations that appear in this text involve an additional effort in identifying 'big-enough' stories and multispecies design speculations by depicting already existing multispecies worldings. These illustrations, as part of a larger multispecies design project, were inspired by some of the existing design work mentioned in this text as well as multispecies negotiations that are encountered in everyday life. As constructed artefacts, they offer merely one collection of enactments that can allow further worlding and further design work.

They present a kind of knowing that does not come from standing at a distance and representing something, but rather providing different initial entries into what multispecies worlding practices can entail. Rather than textual descriptions of these encounters, this experiment with illustrations allows for the sharing of big-enough stories in a way that includes both a speculative realm (in the viewer's interpretation of the depictions) and at the same time a concrete situation that unfolds between humans and other species. Thereby the possible meaning of 'multispecies worlding' does not narrow down into singular answers, but instead expands, generates possibilities and adds richness to possible multispecies worlds.

What brings the multispecies worldings in this text together – both the brief repertoire of existing projects as well as the annotated illustrations – is their effort to knot together different realities of different actors, the care-full but decisive intimacy and attachment that is enacted between different species, and their experimenting with storytelling that tells realities that invoke curiosity, knowledges and solidarity. These designs can shape non–innocent attempts at weaving together different ontologies and epistemologies, proposing and embodying other kinds of worlding relations between humans and other species, and propose to pay more attention to each other's worlding practices. Importantly, these explorations of multispecies worldings are not a rejection of critique and they do not attempt to create a romantic or utopian way out of despair. Instead, they can function as counternarratives, testimonies, autoethnographies, performances, stories, and accounts that disrupt and disturb by exposing complexities and contradictions that have always already existed (see Mutua and Swadener, 2004). They break down the existing dominant grand narratives that seem all–explanatory to tell all kinds of different stories about the shared lives of humans and other species.

This is how speculation can contribute to multispecies worlding.
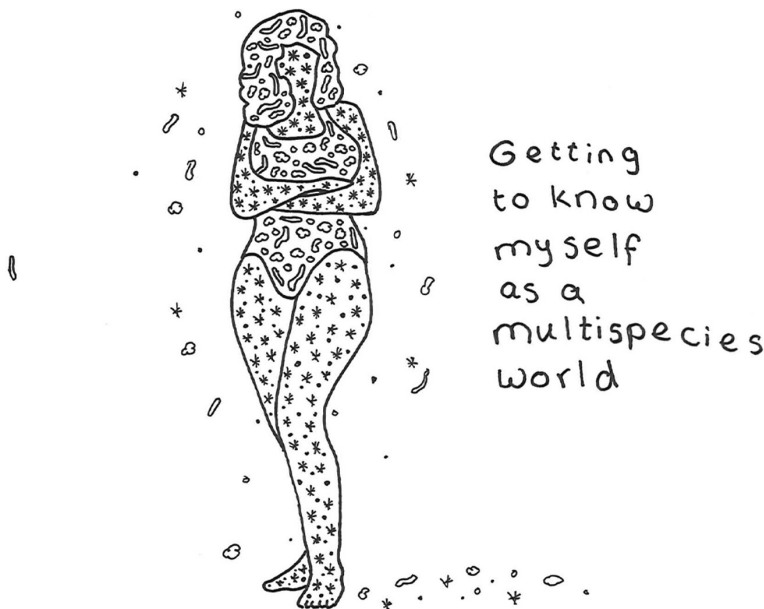
(This illustration refers to the work of Agapakis, n.d.)

Acknowledgements

Note

¹ All images in this text are designed and illustrated by the author.

Conflict of interest

The author declares that there is no conflict of interest.

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