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Multispecies Response-ability in More-than-human Design Practice: Fabulation with Tides

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Abstract

This workshop invites participants with diverse backgrounds to imagine stories with tides, to explore *response-ability* - a notion used by Donna Haraway to cultivate the capacity to respond with other species. As more HCI communities begin to engage with living entities, we seek to move beyond “responsibility” as a solely human moral property towards relational and reciprocal ways of designing-with them. When the entities we “study” begin to respond to one another, their interactions evolve in ways we cannot fully predict, inviting design practice to stay open and caring for these shifting relations. Using tides as a spatial-temporal site of inquiry, we will use speculative fabulation to imagine what *multispecies response-ability* might look like in place and collectively develop practical guides for examining and incorporating it into design practice.



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CCS Concepts

• **Human-centered computing** → **Interaction design process and methods; Interaction design theory, concepts and paradigms.**

Keywords

Designing-with multispecies, more-than-human design, response-ability, design ethics, design practice, speculative fabulation, situated methods, tidal bodies, coastal ecologies

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1 Background and Motivations

The urgency of addressing environmental crises, and the limitations of the existing frameworks to tackle them, has prompted HCI and design communities to seek alternative theoretical, ethical and methodological approaches to anthropocentric ones [23, 25, 28, 38,

81, 86], such as more-than-human design [18, 31, 86], decentering humans [38], sustainable and ecological HCI [24, 45], human-plant interaction (HPI) [9, 14], animal-computer interaction (ACI) [46], care-driven design [15, 56, 58, 93, 94], feminist-posthuman approaches [12, 13, 75], and regenerative material ecologies [40, 51]. Under this background, more-than-human design (MtHD) communities emerged not as a single but plural, intersecting, mutually-shaping ones, with an expanding perspective in sessions, workshops, and publications annually [92].

These communities encompass engagements across various forms of intelligence: from living entities such as microbes, fungi, plants and animals [3, 6, 8, 36, 41, 44, 54, 55, 68, 73, 82, 88, 95], to technological entities such as connected things, artificial intelligence and fabrication machinery [19, 26, 31, 43, 49, 50, 57, 87]. Our workshop engages with living entities and explores multispecies relations. Particularly, we seek to move beyond “responsibility” as a solely human moral property towards relational and reciprocal ways of designing-with other living entities. When the entities we “study” begin to respond to one another, their interactions evolve in ways we cannot fully predict, inviting design practice to stay open and caring for these shifting relations [85]. Our workshop has the following motivations.

First, as different communities have different approaches, clarifying how we should design with other-than-human living entities is crucial. How to practice ethics holistically in multispecies contexts still remains unclear, although ethics informed by more-than-human labour [16], participation [17], care [1, 56, 94], politics of technologies [29, 67], and ethical approval [7] have been discussed. Informed by feminist-posthumanist values and ethics [10, 33, 83, 84], and grounded in practice of diverse communities, our workshop proposes to explore “response-ability” as a holistic practice of ethics in multispecies contexts.

Second, as MtHD may pose the risk of being too abstract, researchers have called for a need to develop more-than-human design in practice [4, 52, 63] and to be more precise in articulating such practices [53]. We contend that more-than-human design ethics must be situated within specific ecosystems and species entanglements. This workshop responds to it by focusing on phenomenon of tides — the shifting coastal forces that shape inter-species relations, expose ecological vulnerability, and challenge static boundaries between land and sea. We take Singapore’s intertidal zones as a concrete setting to explore how design can cultivate multispecies response-ability in place.

2 Theme: Fabulating Multispecies Response-ability with Tides

2.1 Multispecies Response-ability

By “multispecies response-ability” we shift from “responsibility” to “response-ability”, emphasizing that responding to each other as capabilities of all living beings. Fuchsberger and Frauenberger (2023) [30] trace responsibility from a posthuman standpoint, “arguing that prevalent notions of responsibility in HCI fall short in covering the complexity of entanglements of humans with emerging technologies.” (p.65) They take posthumanist perspectives “to rethink where responsibilities sit or are enacted within hybrid assemblages of relations and propose that responsibility is an activity rather

than a static property.” (p.65) While they use actor-network theory, agential realism, and postphenomenology as their grounding theories, in this workshop, we extend their work by focusing on critical feminist-posthumanities, mainly through the work of Donna Haraway, Anna Tsing and Maria Puig de la Bellacasa. We also extend their focus on technologies to multispecies and ecosystems.

Designing in more-than-human worlds requires us to understand the complex and ongoing “responses of the many, each to each other, rather than just the response-seeking humans” [85] (p.224). Donna Haraway calls for cultivating *multispecies response-ability* [34] as *capabilities of being responsive, accountable for, care for, and staying open to co-constitutive relationships between humans and other-than-humans we share the world with*. Maria Puig de la Bellacasa builds on it by asking, “How do we engage with the care of Earth and its beings without idealizing nature nor diminishing human response-ability by seeing it as either inevitably destructive or mere paternalistic stewardship?” [21] (p. 144)

Bridging the concept of response-ability to design, Martin Avila argues that design is about “the way to respond” [2] (p.52). He emphasizes that responding consists of being exposed and attending to “differences in worlds” through “probing speculatively alternative ways of relating” (p.53). Yet it is underexplored how multispecies response-ability look like in specific design practice. In the context of tides, for example, how could design (and technologies) support constant and responsive engagement with the way in which the environment shifts and moves with tides, throughout the season, in order to repair coastline ecosystems through non-obstrusive nature-based approaches? Essentially, the idea of response-ability is an active, dynamic process rather than static property.

2.2 Tides as a Spatial-temporal Site for Exploring Multispecies Response-ability

Design and HCI researchers have raised ecological concerns about multispecies in coastal ecologies [61, 90]. Wegner et al. (2021) [90] proposed a three-phase framework to describe humans and aquatic animals coexistence, suggesting “Surface/Us” phase as where multispecies coexistence is most intense. A recent workshop explored participatory methods for engaging with marine environments and ocean conservation, proposing “amphibious thinking” to embrace multiplicity and collective imagination [70] in fostering ocean literacies. Our workshop further contributes to human-ocean relationship at the “Surface/Us” phase by focusing on tides as a spatial-temporal site for design exploration.

Tides, the regular rise and fall of water at coastlines, are caused by the moon’s pull, shaping habitats vital for marine life and human activities. The rhythm of tides constantly shifts and blurs the boundary between the sea and land—a shoreline that is misleadingly drawn as defined and static on conventional maps [20]. As the tide interacts with weather events and coastal morphology, it also reshapes the coast in often unpredictable ways. Intertidal areas do not respond to exact modelling, but are best understood through embodied and relational practices of generating knowledge and making meaning [11]. In HCI, Koulidou et al. [42] poetically captured their lived experience of high and low tides of the North Sea

through jewelry design. Embracing embodied experiences manifested in Koulidou et al.'s work, in the workshop, we integrate place-based inquiry [39, 66] at tidal areas and hands-on making.

To facilitate the workshop, we provide five themes around tides: *rising tides*, *intertidal life*, *tidal power*, *tidal knowledge*, and *tidal bodies*. *Rising tides* concern how the periodic tidal rhythms and rising water level due to global warming [59, 62] influence multispecies differently. *Intertidal life* encompasses diverse habitats where humans and other species live with the changes between high and low tides [74]. *Tidal power* concerns energy harvested from tides and the disturbance of local ecosystems by the construction of tidal [47, 91]. *Tidal knowledge* concerns what knowledge we can learn from “a sensorial, intellectual, and embodied literacy” [37] of tides. *Tidal bodies* rethinks embodiment and ethics via shared waters between multispecies entities [48] and our bodily attunement with tidal pulses.

3 Context: Tidal Ecologies in Urban-Island Singapore

Informed by critical feminist theorists [22, 32, 35, 77, 78], we recognize a need to explore situated knowledges and practices with specific positionality, species, in particular locations, political and cultural contexts [49, 64, 69, 86]. Our workshop situates multispecies response-ability in Singapore, a tropical urban-island city-state comprising one main island and more than 60 smaller offshore islands.

Singapore provides rich habitats for diverse species. Its marine ecosystems alone host more than 100 fish species, over 200 sponge species, and 255 hard coral species—representing more than a quarter of all coral species globally [89]. Yet these habitats face growing pressure from climate change and urban development. As a low-lying island, Singapore is acutely vulnerable to sea level rise [72]. Projections suggest that sea levels around Singapore could rise by 1.9 m by 2100 under high-emission scenarios [80].

Coastal flooding has already occurred in some areas, such as East Coast Park, where high tides alone have caused flooding without rainfall [27]. In response, the government has implemented long-term “coastal protection” measures, including the *Long Island* project, aimed at safeguarding low-lying areas through extensive land reclamation [5].

While promising protection, infrastructure solutions also raise ecological concerns. Reclamation disturbs marine sediments and can smother seagrass meadows and intertidal habitats that would otherwise adapt by migrating inland. With much of Singapore's coastline armored by seawalls and revetments, these living shorelines are instead trapped—unable to shift, regenerate, or sustain the species they host [71, 79]. The question, then, is not only how to *defend* the shoreline, but how to *live with* it.

These complexities invite rethinking design practices for coastal ecologies in Singapore through *multispecies response-ability*. Rather than reinforcing defensive boundaries, we want to foreground shared vulnerability, interdependence, and care among human and other species. Our workshop seeks to explore how such an approach could cultivate coastal design practices that enable multispecies flourishing, that respond *with*, not merely *against*, the rising tides.

4 Workshop Goals, Methods and Structure

Our full-day workshop aims to address: **1) what multispecies response-ability could look like in place, and 2) how design could embody multispecies response-ability in practice.**

First we will travel to Labrador Nature Reserve [60] to gather practice- and place-based insights [39, 65, 66, 70]. The location [60] is a rich context for watching tidal-zone species and coastline-walking. We position these activities as fostering design sensibilities to local tidal ecologies. Indoor alternatives will be provided in the event of severe weather (heat, rain, flooding) or individual inaccessibility, and one organizer and student volunteers will follow up with outdoor activities to ensure participant safety, ethics of conduct and attendance monitoring.

Based on place-based insights, participants will adopt speculative fabulation [34, 76] to imagine and materialize multispecies response-ability with provided themes of tides. Finally, based on a set of critical questions concerning temporal responses, translating materiality, designer/researcher positionalities and ethics, participants will generate open-ended guides to incorporate multispecies response-ability in design practice.

5 Anticipated Outcomes

Workshop outcomes will be compiled into a modular, online, living repository, shared under a Creative Commons license via a dedicated website to promote reuse and remixing. These include: 1) An illustrated and annotated digital collection of fabulated stories that provide thick interpretations of multispecies response-ability situated in Singapore; 2) Open-ended guides for designers and researchers to examine and incorporate multispecies response-ability as a holistic ethics into their practices. The insights from this workshop will form the foundation for future research, potentially leading to a paper for a future DIS conference.

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