Megan van Gerwen

1930834

[DUB210] Designing with more-than-human worlds

Group 7: The Bridge

DOMMEL
WORKBOOK

an ongoing zine of relations

NOTICING WORKSHOP

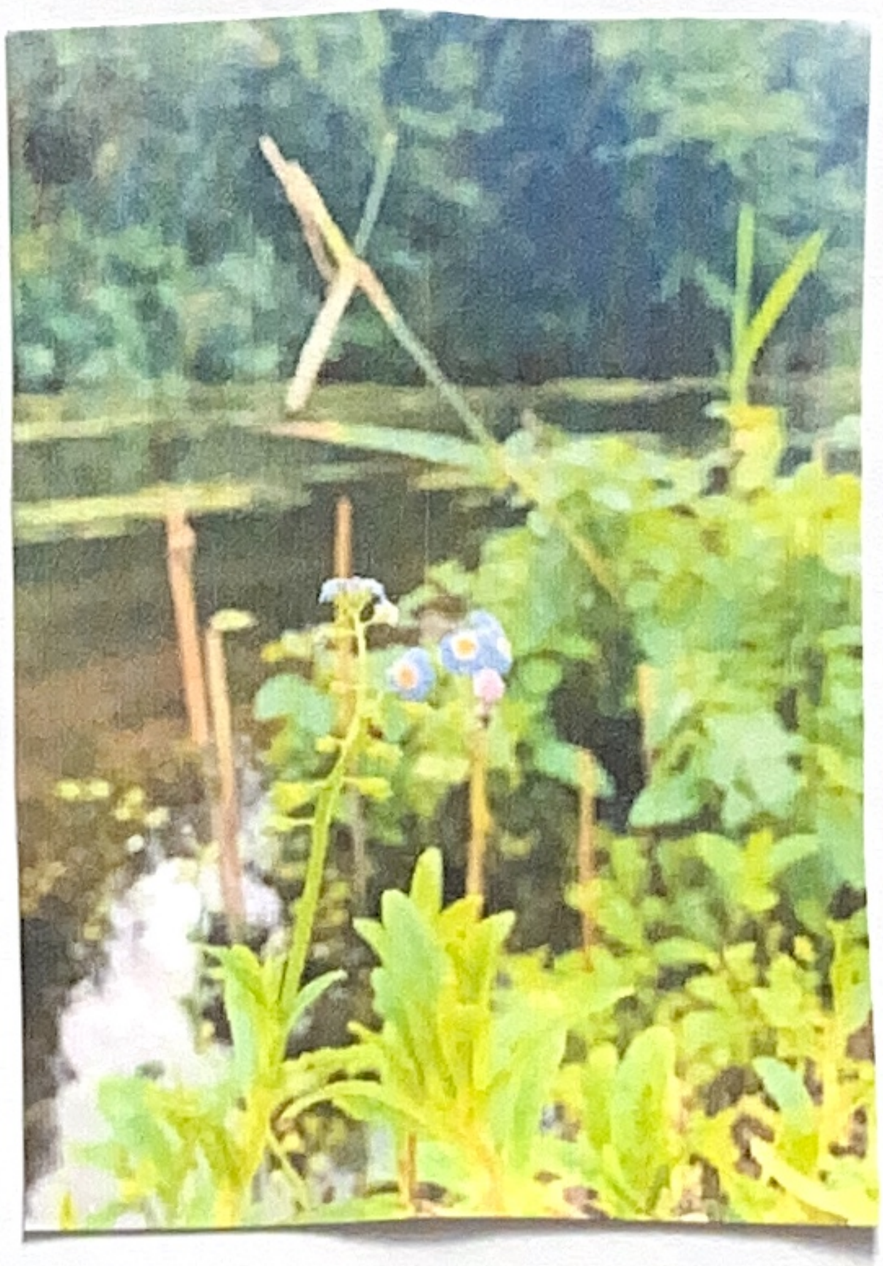
01/09/2025

taking different perspectives using a mirror









We walked alongside the Dommel using a mirror to find new perspectives. Taking pictures this way, I noticed that I was less focused on how aesthetically pleasing the images were. I tried to find abstract viewpoints. Looking back at my pictures, I noticed that colorful plants and certain shaped caught my eye. Besides, I only took pictures of plants.

CYANOTYPE TUTORIAL

04/09/2025

SHADOW TRACING



CYANOTYPE





What was it like to work with light in this way?

- It was completely new for me to work with shadows like this. It made me notice the contours of plants and animals (insects). It was fun.

What did the Domenel offer you?

- I noticed things I didn't before. The materials (leafs and branches) could now be used to create a composition.

How did the materials and the environment shape the print?

- the leafs sort of merged together. the wind moved the leafs a bit so the print blurred out a little.

What felt alive, difficult, beautiful, frustrating?

- It was difficult to not pick the pretty flowers for the cyanotype, since we could not do any harm to the Domenel and the environment. But it did make me notice the fallen leafs and create a composition out of it.

SHIFTING PERSPECTIVES
WORKSHOP

08/09/2025

becoming exercise

The becoming exercise at first seems like a very silly and odd thing to do. To really get the full experience I had to embrace the sillyness and really concentrate. I noticed that it was very easy to get lost in my stream of thought. By focussing on my senses and giving over to the experience I could imagine what it was like to be an island on the Dommel. Hearing the water, feeling the cold wind and a bit of heat from the sun. Hearing people and a bird in the distance. This exercise was not only becoming something, but also becoming aware of the surrounding and using a bit of imagination.

COHABITATION
WORKSHOP

15/09/2025

At home I live with my dogs, some plants and some insects as non-humans. Apart from these, there are many small organisms that are too tiny to see that we live with.

This made me aware that we are living with far more species than I was aware of. Besides, the way we set up our living space as humans is very human centered. Having plants in certain places as decoration, not necessarilly in a place that is best for the plant.



my dogs

TUTORIAL PHONE AS OBSERVATION TOOL

18/09/2025



tanacetum vulgare



papaver rhoeas



silene dioica



calystegia sepium



crataegus monogyna



glechoma hederacea



potentilla anserina



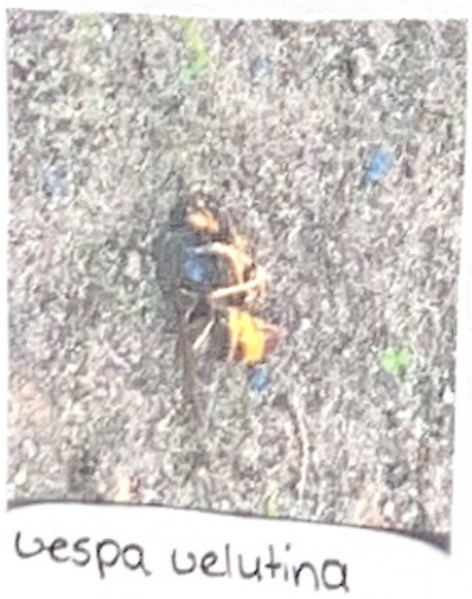
panaeolus cinctulus



daucus carota



bondarzewia berkeleyi

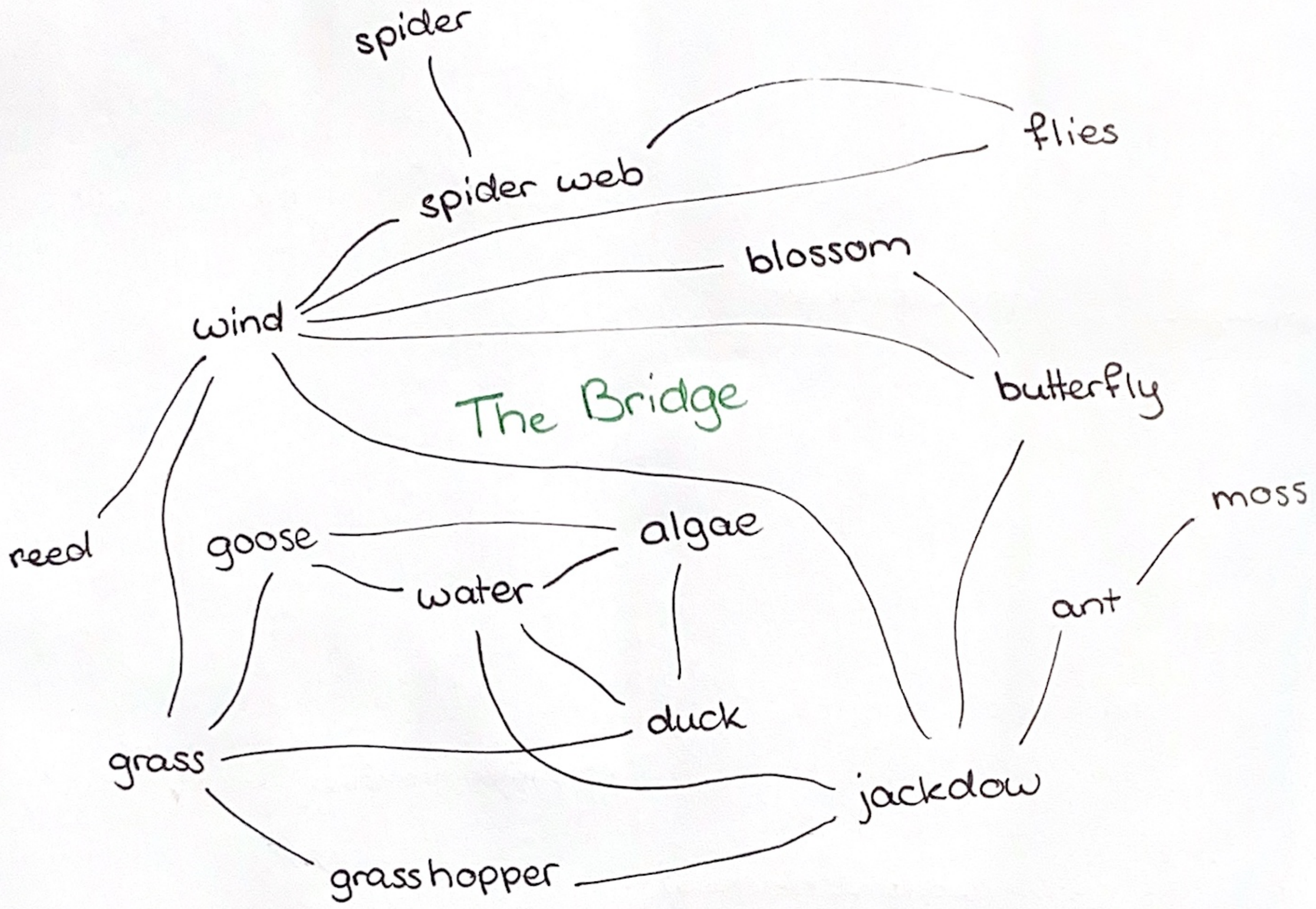


vespa velutina

The non-humans that were most interesting to me were the ones that had interesting shapes and colors. Knowing the names of all these non-humans made my connection with them feel more personal.

ENTANGLEMENTS WORKSHOP

22/09/2025



The wind has very interesting connections in my opinion. In its relation with the blossom, and the insects and birds it is all a beneficial connection. But looking at the spider web, it could easily destroy it.
The four concepts (invasion, empire, capital and acceleration) help explain the dynamics by structuring the analysis of all the entanglements.
If I had to design an intervention, it would support the relation between the wind and the spider web, since this is currently a negative relation.

HERBARIUMS TUTORIAL

25/09/2025

I first noticed this plant during my walk alongside the Dommel for the 'phone as an observation tool' tutorial.

I approached this plant with care and asked if I could pick it for this herbarium. This felt a bit silly, but why not ask plants consent like we ask humans.



The shape and color of this flower still spoke to me after seeing it in multiple places alongside the Dommel at the TU/e. I even noticed that this plant also lives by the Dommel near my house, which made me feel even more connected with it. That is why I decided that I wanted to pick this plant.

NATURAL DYES TUTORIAL

02/10/2025



A natural dye of the *dysphania ambrosioides*. Just a few meters from the Dommel. It was alone so it caught my eye. I spoke gently to it. The color I expected was green. This process made me realise that all the species at the Dommel are more than just what you see on the outside.

I would now think more about my approach and interaction with all non-humans at the Dommel.

TEXTURE RUBBING TUTORIAL

09/10/2025

Texture is something I would say you could best experience through touch. In this tutorial I came to see how texture can be perceived in other ways as well, like making it visual.

During this exercise I noticed some smaller organisms like tiny spiders and things that lived on the trees.









I now think more about what things would feel like instead of just looking at trees for instance as one big thing. I start looking closer and want to interact.

READINGS
WEEK 2

1. Being The Creek
2. May I Share a Park Bench with You?
3. Situated Design and False Creek Futures

Being The Creek

This paper introduces Being The Creek, a mobile augmented reality (MAR) experience created by researchers Yangyang Yang and Kimiko Ryokai at the University of California Berkeley. Its purpose is to challenge the human-centered (anthropocentric) worldview, which has significantly contributed to environmental degradation.

Indigenous perspectives

Indigenous people have opposed the anthropocentric worldview by viewing non-humans as subjects rather than objects. They view non-humans actors as an extension of themselves and emphasize they are a part of a gigantic kin with non-humans such as waterways by saying "I am the river, the river is me".

The Experience

Participants are invited to adopt the "first-person" perspective of Strawberry Creek in Berkeley, California.

- MAR Journey: The experience is a one-mile walk with five sites, each showing a different historical period from the creek's point of view. It works by adding overlaying generated visual objects over real-life environments.
- Embodied Interaction: To see the MAR scenes, participants must lie down on a mat next to the creek. This unusual posture is designed to help them move away from a typical human-centric viewpoint.
- First-Person Perspective: Participants are prompted to speak as the creek, using the pronoun "I" to describe what they see and feel. This approach is inspired by the Indigenous worldviews that recognize nonhumans as "persons". ("If a maple is an it, we can take up the chain saw. If a maple is a her, we think twice.")

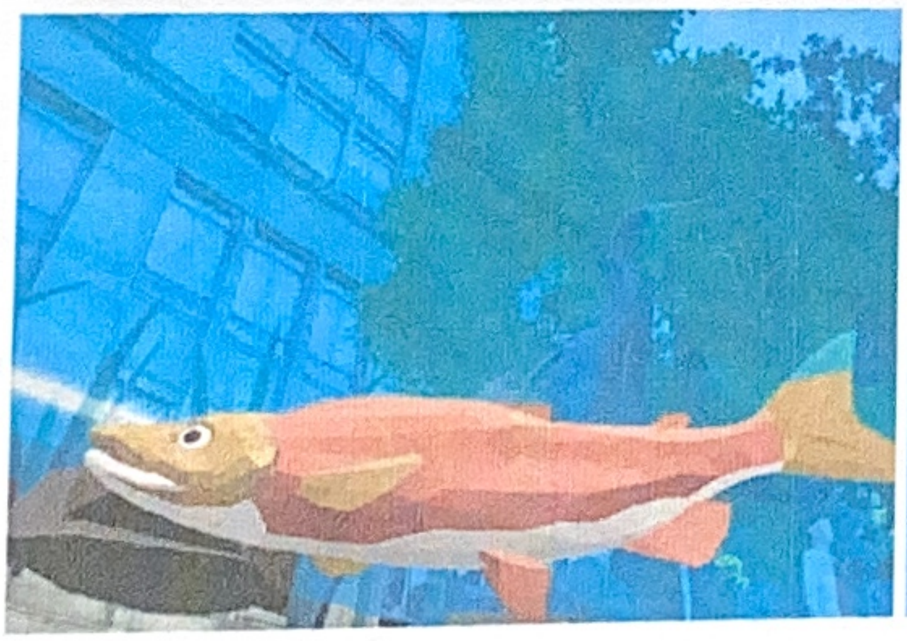


Figure 1: Underwater perspective of the creek including aquatic life in the MAR simulation



Figure 2: Showing the Creek's historical use as a sewer in the MAR simulation

Study and Findings

A study was conducted with 15 local participants, each undertaking a two-hour journey.

- Decentering the Human Perspective: Speaking as "I" (the creek) caused participants to view humans as "they". This shift led to critical reflections on human actions like pollution and covering the creek.
- Noticing the Creek Differently: Participants began to perceive the creek as an animate
- Shifting Relationships: The journey highlighted the change from a reciprocal relationship with Indigenous peoples to an exploitative one with settlers. As the creek, participants felt "abused," "betrayed," and treated like a "nuisance". They emphasized the discrepancy in the relationships with humans: "Seeing (passerby) from that underwater perspective, it reveals that (human-creek) power dynamic", and, "There's nothing I can do. [...] I'm just lying down and passing by. I know I can give life, but I don't have arms to fight back."
- Changing Landscape Perception: The physical acts of lying down and walking along the creek's path made participants aware of how much they had previously overlooked this natural feature. ("When you're put into kind of an uncomfortable situation, you're more triggered to be aware of things, to be more observant, because it's unusual. So you would be more aware of things that you would typically have just kind of ignored.")
- Emotional Journey: Participants' emotions ranged from peace and joy (pre-colonial era) to frustration, sadness, and anger (industrialization). The speculative future evoked mixed responses of hope, distrust, and pessimism.
- **Conclusion:** Being The Creek shows how MAR and embodied interaction can be an effective invitation to notice and reflect on "more-than-human" perspectives within one's immediate urban environment, being with its own "spirit," "will," and a lifespan different from that of humans.

Questions to start a discussion:

1) How can modern technologies such as augmented reality (AR) help people to better understand the past and create a more positive future image of the non-human world?
2) How does laying on the ground help you as a person from the human world to connect with the non-human world? What new perspectives does it unlock?
3) Why is it important to step "outside" the human world and emerge yourself into a non-human world? For instance, by using AR to get the creek life perspective.

References:

1. Yangyang Yang and Kimiko Ryokai. 2025. Being The Creek: Mobile Augmented Reality Experience as an Invitation for Exploring More-Than-Human Perspectives. In Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems (CHI '25). Association for Computing Machinery, New York, NY, USA, Article 740, 1–19.

1) it can create a viewpoint that humans would normally not be able to have. This can give new insights when reflecting on the past, for innovation.
2) it creates a new awareness and viewpoint, in which overlooked things can be noticed and experienced.
3) to decenter humans and to think about not only what humans want and need, but also how it affects non humans.

2

MAY I SHARE A BENCH WITH YOU?

GROUP 2



Everyday objects such as benches are not neutral: they actively shape encounters between humans and non-humans. Asking *"May I share a park bench?"* reframes design as a matter of negotiation rather than dominance.

Key Concepts

Horizontality
Moving away from vertical, human-centered hierarchies in design.

Three Dimensions of Horizontality

1. **Spatial** → How bodies share space. Example: adjusting bench distance to respect the Duck's comfort zone.
2. **Agential** → Respecting refusal as an expression of non-human agency. The Duck rejecting the bench extension was itself a "design choice."
3. **Temporal** → Aligning with non-human rhythms (daily cycles, seasonal patterns, lifespans). Visiting the Duck at dawn or midnight revealed ways of inhabiting space humans usually miss.

Mimicry & Self-Alienation
Imitating the duck's movements did not produce equivalence, but destabilised habitual human-centred thinking. Such mimicry fosters empathy and allows other-than-human perspectives to emerge.

Humility in Design
Not placing humans above others; accepting that design outcomes may be partial, messy, or refused.

Key Insights

The Bench as a Social Device
Benches structure proximity; they can invite, allow, or exclude. Sharing a bench involves subtle negotiations of space and respect, potentially between humans and non-humans.

Asking, Not Assuming
The question *"May I share a park bench?"* emphasises that sharing is not automatic but contingent upon consent. This shifts design away from entitlement towards relationality—asking, waiting, and adjusting.

Humility in Public Space
To share public space, which is cohabited, requires humility: accepting partial presence, compromise, and even refusal.

From Function to Relation
The author suggests seeing benches as a **relational technology**, i.e., a way to shape encounters, instead of treating them as functional. This perspective expands design thinking toward **ethics of coexistence**.

Discussion Questions

Refusal as Agency
If a non-human (like the Duck) refuses to participate in our design, by ignoring, avoiding, or rejecting it, what should the designer do? Stop the project? Adapt the design? Or continue anyway? they could try to adapt the design, but nothing should be forced.

Mimicry in Design
Can copying or imitating non-human behaviors (like Ege mimicking the Duck) help us design with more empathy and responsibility? Or does it risk anthropomorphising (projecting human ideas onto them) instead of truly understanding them? both. it can help understand the non-human, but no assumptions should be made about the non-human.

Temporal Horizontality in Practice
How could designers change their own time perspective to align with non-humans? For example: Designing with the lifespan of trees in mind, considering pets' daily rhythms, respecting seasonal cycles in agriculture or ecosystems. depending on the non-human, the designer should consider the daily cycles, seasonal pattern, lifespan and/or other rythms of the non-human.

MAY I SHARE A BENCH *WITH YOU?*

GROUP 2

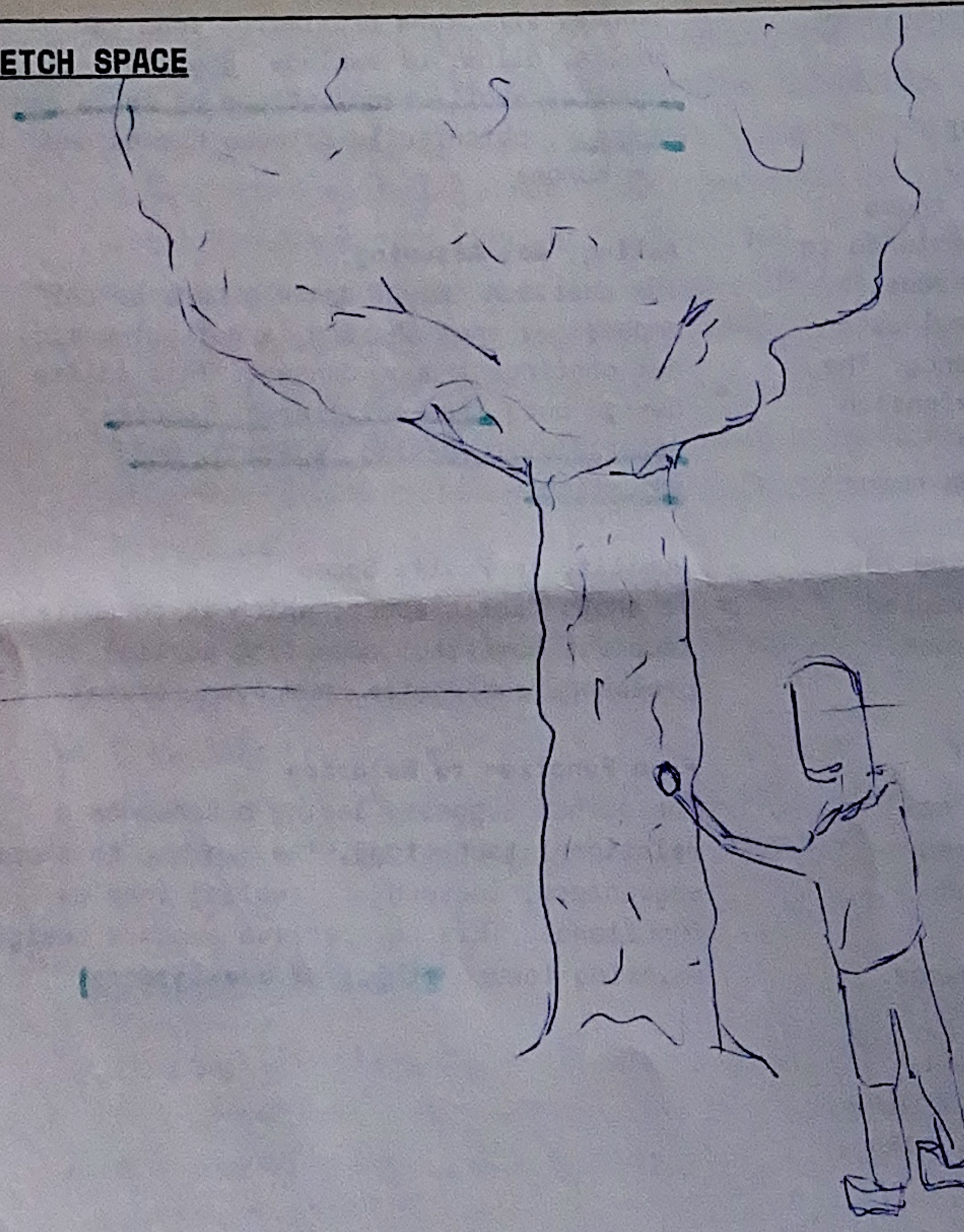


Activity

Sketch out an imaginary non-human which communicates without speaking.

Become pairs with the person beside you and ask them to demonstrate the way they communicate with and understand their non-human.

SKETCH SPACE



the human communicates with the tree (the non-human) using touch. physically connecting with the non-human.

3

Summary

This paper presents a research-through-design study that challenges extractivist approaches to environmental data collection, particularly marine debris citizen science initiatives. The authors argue that conventional shoreline cleanups, while generating useful policy data, fail to foster meaningful relationships between people and marine ecosystems or support decolonization efforts.

Set in False Creek, Vancouver, an urban marine inlet with a complex colonial history involving indigenous displacement and industrial pollution, the research develops an alternative approach called "relational information systems." Instead of simply counting and categorizing marine debris, their design interventions use "paradox objects" that invite open-ended reflection and dialogue about human-environment relationships.

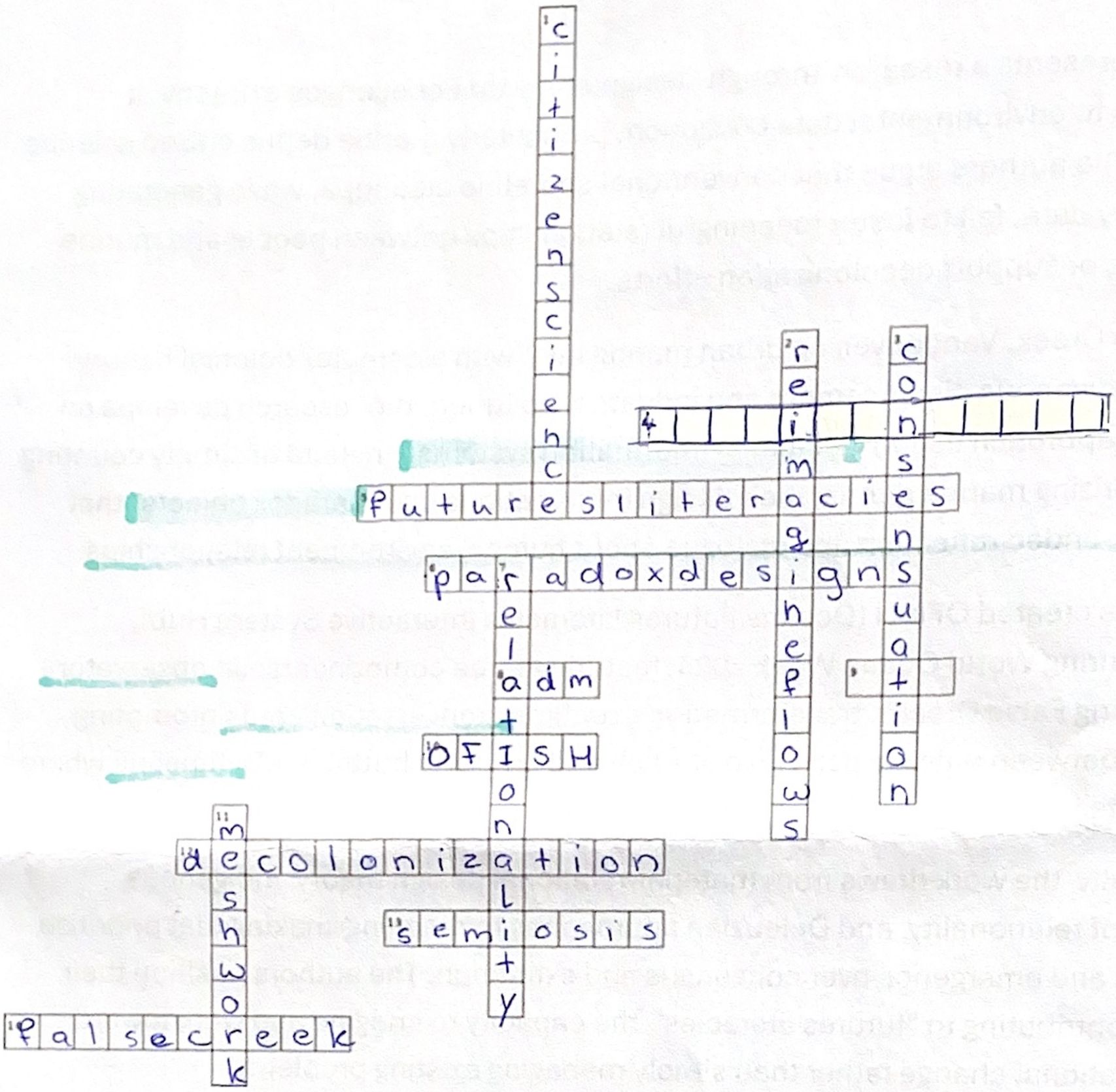
The authors created OFISH (Oceans Futures Literacies Interactive System Hub), installed during World Ocean Week 2024, featuring three components: an observatory map showing False Creek's transformation over time, conversation cards prompting dialogues between unlikely pairs (like starfish and cigarette butts), and a timeline where participants project alternative futures for the inlet.

Theoretically, the work draws from material-relational design theory, indigenous concepts of relationality, and Deleuzian approaches to meaning-making that prioritize difference and emergence over consensus and extraction. The authors position their work as contributing to "futures literacies" the capacity to imagine and work toward transformational change rather than simply managing existing problems.

Questions:

1. Why is grounding design in local history, ecology, and community relationships essential? because if we don't do this, we will just keep managing existing problems instead of working toward transformational change.
2. How should today's design and environmental repair efforts recognize and respond to the history of land loss and environmental change? it should reflect on and analyze what happened to prepare and make sure history doesn't repeat itself.
3. What are the strengths and challenges of using public, interactive installations to spark community dialogue about ecological and social futures? And how would you feel if you encountered such installations?
   strength: more mind give more ideas and creates awareness
   challenge: people might get stressed
   I think it would be very interesting to see what is happening in my own environment and how others think about things

False Creek Futures Research Crossword



Across

4. Worldview that includes non-human beings and entities (3 words)
5. Capacity to imagine and work toward transformational futures (2 words)
6. Design objects that resist categorization and invite reflection (2 words)
8. Type of marine debris created by humans (acronym)
9. Research approach using design to generate knowledge (acronym)
10. Interactive system created by researchers for World Ocean Day
12. Process of undoing colonial structures and ways of knowing
13. Process of meaning-making in information systems
14. Urban marine inlet in Vancouver, site of this research (2 words)

Down

1. Volunteer-based scientific data collection (2 words)
2. Design approach that prioritizes place and context (2 words) RIS?
3. Process of reaching agreement or common understanding
7. Indigenous theory emphasizing interconnectedness and responsibility
11. Network of interconnected beings and practices

READINGS

WEEK 3

4. Designing for Collaborative Survival
5. Constituency as a Matter of Practice

4

Guide reading group 4 – summary

In the article "Design for Collaborative Survival", the writers explore how design can help to build new kinds of relationships between humans and non-humans, especially focusing on fungi. In the article it is discussed that human survival depends on the health of many other species apart from humans. Therefore, the idea of 'Collaborative survival' is introduced. Instead of only focusing on the need of the human, they explore how design can support better and more respectful relationships between humans and non-humans.

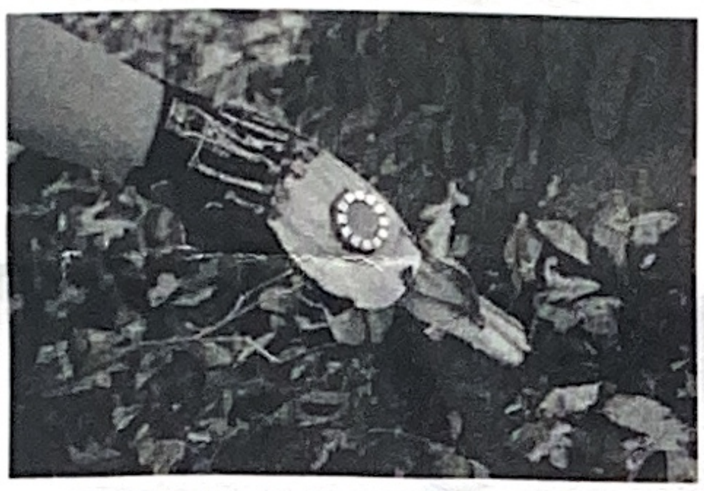
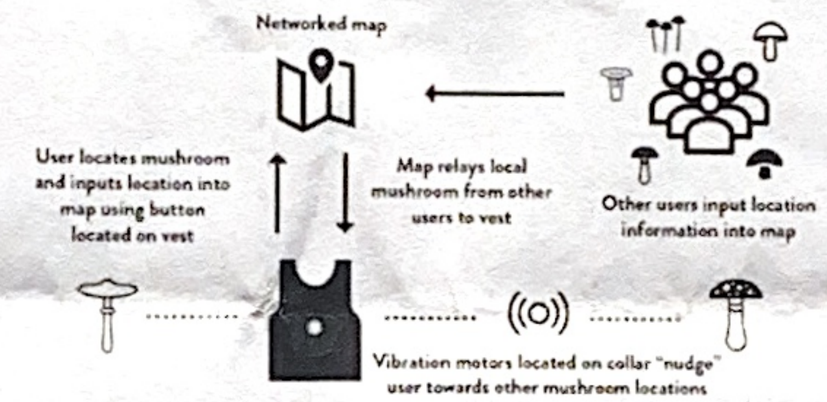


Figure 1: The Hand-Substrate Interface creates a direct connection and engagement with environment by requiring the wearer to physically insert their hands in soil to obtain a digital moisture reading.

To have a better insight of this idea, the authors worked with mushroom foraging. Apart from just collecting food, it also involves looking at how the fungi grows and lives. To see this more clearly, three designs came forward in this article that involve noticing the human-fungi relationship.

1) Hand-Substrate Interface (HSI): This tool is shaped like a glove. Once you put your hand with the glove into the soil, the glove detects the condition of the soil and sends digital information about it, like the moisture.
2) Data HarVest: This tool is shaped like a vest. The vest vibrates when you come closer to areas where mushrooms have been found before. This, so that wearers become more aware of their surroundings.



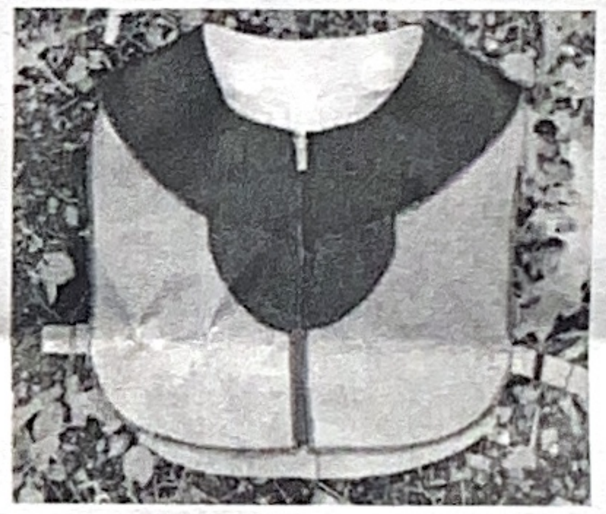


Figure 3: Data HarVest is a wearable tactile map that guides wearers to locations of community reported fungi growth.

3) Spore Stepper: This tool is shaped like a walking stick. The stick collects samples of soil while walking, so that it can reveal places where fungi is present in the ground.



Figure 4: Spore Stepper is a walking stick that can also be used to collect soil samples.

The writers have come across a lot from these experiment, and there were design tactics that they came across that helped them during the process. The three that stood out the most were 'engagement', for encouraging interaction with the environment, 'attunement', for the sensitivity to the presence and needs of fungi, and 'expansion', for challenging that were much closer to the non-human world than we realize.

The article also reflects on how this approach can also be challenging. Design can really help to blur the line between the human and non-human life, but there will always be the risk of technology reinforcing the perspectives of humans. The writers make really clear that we need to keep thinking about the designs we make in this context. There will always be the risk of reinforcing human control rather than truly collaborating with other species.

In conclusion, the article "Design for Collaborative Survival" argues that we can use design to come closer to the world around us, especially in fungi. Design should not only be used in human context,

but can also be used to support non-humans and their needs. With the experiments the writers of this article did, they managed to engage in mushroom foraging and getting to know their needs and context. In here, the authors show how design can open space for empathy, awareness, and respect between humans and fungi.

Questions:

1. How does shifting the design focus toward nonhuman needs change how we design interactive systems? Can you think of an example outside fungi where this would matter? we decenter humans, maybe humans can help others instead of everything being beneficial for humans
2. The prototypes extend human perception into the environment. What ethical or practical effects or consequences might occur when technology mediates our relationship with nonhuman species? it will become human centered again. it might harm the nonhumans
3. The paper proposes engagement, attunement and expansion as tactics. Which of these feels most achievable in real-world design projects, and what barriers might prevent it? engagement feels most achievable. but many people might not be interested enough to interact

Activity:

Non human charades, how to Play:

Each group takes turns: One person thinks of a non human and silently acts like that entity for 30–60 seconds. No words or sounds are used that directly give it away.

Other group members guess what entity it is. When the group guesses correctly, the "actor" briefly says one fact about how humans depend on or interact with the non human (connect it back to collaborative survival).

interesting how silently acting like an entity can still make it quite clear what non-human it is

Liu, J., ATLAS Institute, University of Colorado Boulder, Byrne, D., School of Architecture, Carnegie Mellon University, Devendorf, L., ATLAS & Information Science, & University of Colorado Boulder. (2018). *Design for Collaborative Survival: An Inquiry into Human-Fungi Relationships* [Journal-article]. ACM.
https://jenliujenliu.com/Files/Liu_Collaborative_Survival.pdf?utm_source=chatgpt.com

5

Group 5

Title of the paper: *Constituency as a Matter of Practice: Moving a Plant Studio*
Authors: *Oscar Tomico, Doenja Oogjes, Ron Wakkary*

Summary

This paper uses the move of a "plant studio" from Barcelona to Tilburg as a real world case to put **designing-with theory** into practice. By analysing the relocation, the authors show how a **constituency** is constantly formed in more-than-human design. They documenting with logs, photos and social media posts and use the **design events vocabulary**: moments, encounters, transitions, pauses, other-times, to make sense of actions and temporalities.

3 key concepts of **designing-with theory**:

- **constituency:** a gathering of humans and nonhumans from where designing takes places (eg. kitchen)
- **speaking subject:** the human role within the constituency, speaking on its behalf, caring for and maintaining it.
- **repertoires:** embodied actions used by the speaking subject to engage nonhumans and enable their participation

5 repertoires:

1. negotiating boundaries and membership
2. being open to encounters
3. giving time and space
4. attuning to multiple temporalities
5. including exclusions

Together, the study turns abstract theory into a concrete example and offers practical ways for designers to act and reflect in more-than- human design.



Key Themes

1. It **challenges anthropocentric assumptions (design for humans only).** Plants shape how the studio functions, not just decorate it. Expands the idea of who/what counts in design beyond human "users" or "voters."
2. It situates **design** as something **emergent from interspecies relations.** Each move of the studio creates a new human–plant–place configuration; design emerges through these shifting relations. Knowledge is produced by working with plants as co-actors in the RtD process.
3. It makes visible the **dependencies between human cultural practices and non-human ecological needs.** Humans must respond to ecological needs (watering, soil, light), which entwine plant survival with human practice and meaning-making.

1) instead of political, here it is a physical space where entities coexist (instead of voting)

Questions

2) it is an example showing how these can be applied.

1. **How does the paper redefine constituency compared to traditional political or organizational contexts?**
2. **How does this project challenge or extend the methods of research through design and more-than-human design?**
3. **What, if any, new perspectives emerge by treating plants as constituents? Are these perspectives generalizable or are they applicable to other situations?**

3) you might start seeing how the plants benefit the environment and you. And you could maybe create a space that is better for the plants instead of a human centered setup

Activity:

STEP1: find a place

STEP2: pick a small area/ a plant

STEP3: observe by **design event vocabulary**

- Moments: small changes or feelings
- Encounters: unexpected participants
- Pauses: spots where you can stop and wait
- Other times: seasons, weather, growth rhythms
- Take photos, sketch or jot notes.

I noticed that I only see the larger beings and would not include the smaller bacteria etc. since they are not visible, even though I know that they are there

STEP4: practise **5 repertoires**

- Decide who counts as a member (negotiate boundaries)
- Stay curious about surprises (open to encounters)
- Give time and space (pause and let things unfold)
- Notice different rhythms (attune to temporalities)
- Look for what's missing or ignored (include exclusions)

STEP5: draw a **constituency map**

Let the paper be the Speaking Object

Reflect on the idea of the speaking subject by shaping this A4 handout into something that expresses what it wants to say.

This paper carries not only the story we discussed, but also the story of its own material (once a plant). We invite you, as Tomico describes, to gather and negotiate with it. Instead of speaking for the paper, let it be the speaking subject and shape it to express its voice, essence, or core message..

I tend to fold patterns or crumple it up to a ball so I can play with it

Step 1: Fold, crumple, tear, roll, or sculpt the summary handout

- Listen to the material: what movement does the paper "invite"? Where does it resist? What is the paper's story?

Step 2: Place the paper-object in front of you as if it were a being in the constituency.

- Sit with it for a moment: what is it saying now? What role does it take?

Step 3: Briefly write down or share:

- What does the shaped object coinmunicate?
- How did it feel to let the paper (a nonhuman) "speak"?
- How does this connect to the idea of designing-with?

because I crumpled it up it now looks like it is hurt. Like it has been through a lot

the shape and colors now mean more than the words on the paper

References:

Oscar Tomico, Doenja Oogjes, and Ron Wakkary. 2025. Constituency as a Matter of Practice: Moving a Plant Studio. In CHI Conference on Human Factors in Computing Systems (CHI '25), April 26–May 01, 2025, Yokohama, Japan. ACM, New York, NY, USA, 17 pages. https://doi.org/10.1145/3706598.3713916

READINGS
WEEK 4

6. Seeding a Repository of Methods-To-Be for Nature-Entangled Design Research
7. Backyard Practices
8. Decentering through Design

6

Group 6

Seeding a Repository of Methods-To-Be for Nature-Entangled Design Research

By the authors: Oscar Tomico, Anton Poikolainen Rosén, Svenja Keune, Ferran Altarriba Bertran, Danielle Wilde, Tau Ulv Lenskjold, Ruut Tikkanen, Daniel Fernández Galeote, Oğuz 'Oz' Buruk, Velvet Spors

Summary

Complex and rapidly escalating environmental crises are threatening the existence of life on the planet as we know it. Traditional design often places humans at the centre, treating nature as a backdrop or resource. The paper argues that utilising new design research methods that entangle humans with nature, rather than keeping them separate from it, is key to making the world a better place. To explore this, the authors ran a workshop with participants from diverse fields (design, biology, ecology, art, etc.) to create new "methods-to-be" — experimental and incomplete ways of working that can support nature-entangled design research.
The authors collected the methods and treated their unfinished, rough form as a positive feature. This shows how methods are born, how they can mix and grow together, and how they can stay flexible for different uses. Instead of offering ready-made tools, the authors provide a starting ground of ideas that others can try out, modify, and learn from in their own work.

The authors provide five background points that guided their work:

1. **Nature-entangled design** → Design must go beyond human-centeredness to acknowledge ecological interdependence.
2. **Method-making as a practice** → Methods are not fixed; they are always under construction and shaped by context.
3. **More-than-human methods** → Methods should give space to non-human actors and relationships, not only human needs.
4. **Repositories as collective resources** → Gathering and sharing methods can help researchers learn from one another.
5. **Value of incompleteness** → Unfinished or "half-formed" methods can be generative, because they leave room for adaptation and growth.

Workshop

The workshop brought together participants from different fields, including design, HCI, biology, ecology, and art. Instead of asking them to simply present the methods they already use, the authors asked them to create "methods-to-be".
Participants sketched, wrote down, and discussed their ideas, often drawing on their own projects but re-framing them in ways that could be useful for others. The results were not finished methods, but rather starting points. After the workshop, the authors curated these outputs, together with annotations, into a repository of methods-to-be, which forms the main body of the paper.

One example is a method of using the senses as the main research tool when studying relationships between humans, nature, and materials. Instead of only observing by writing notes and taking photos, researchers are

invited to immerse themselves sensorially through smell, touch, sound, taste, and embodied presence. This method is unfinished because it does not prescribe exactly how to sense. Instead, it suggests a general direction that others can adapt to their own context.

Questions for discussion

Question 1	How can methods remain open and unfinished without being too vague and broad to be useful? the methods should be like guidelines or have some suggestions on application
Question 2	What might be barriers for researchers or designers in actually using "methods-to-be" in their own work? methods-to-be might be too vague or not scientific enough
Question 3	How could the usage of ecological or biological practices in design be (dis)advantageous? Humans might not directly profit as much since it is less human centered

Activity

Create your own method-to-be! Make an unfinished design method that could help humans engage more closely with nature.

1. **Choose a starting point:** Think of a non-human you want to engage with. the bridge
2. **Invent a method:** Imagine a way of interacting, observing, or designing with it.
   - Ask yourself: What senses are involved? What actions or practices does it invite? What mindset does it create? touch / hearing
   - Keep it open and experimental!
3. **Write or sketch it out:** Give your method a name and write down a short description of how it works. closing your eyes and only using ~~touch~~ sensory and auditory cues.
4. **Share with the group:** Present your method-to-be. Others can ask questions, suggest additions, or imagine how it could cross-pollinate with other methods.
5. **Reflect together:** Discuss what it felt like to create an unfinished method. What was difficult? What was exciting? it doesn't really feel like a proper method

Reference

Tomico, O., Rosén, A. P., Keune, S., Bertran, F. A., Wilde, D., Galeote, D. F., Lenskjold, T. U., Tikkanen, R., Buruk, O. '., & Spors, V. (2024). Seeding a Repository of Methods-To-Be for Nature-Entangled Design Research. *Designing Interactive Systems Conference*, 1101–1115. https://doi.org/10.1145/3643834.3660745

7

Backyard Practices: A Liminal Approach to Designing in More-than-Human Worlds - by group 7

"Backyard practices are a subtle disruption of norms that emphasizes the peripheries, backyards, balconies, and even windowsills and moves away from studios and labs that valorize a practice of accepted methods, techniques, and modes of questioning and knowing."

Summary

How can design research happen in less traditional spaces like labs and meeting rooms? Using lived environments like backyards and can help designers shift their methodologies and design research practices.

The authors define three common features among their backyard practices:

- **Time:** durations and intensities are determined by nonhuman temporalities that decenters us and our plans
- **Liminality:** a description for the sites (backyards); it shows the relations and shared agencies of more than human worlds
- **Proximity:** the designers establish themselves next to non-humans that also call this place home

Besides that, they also defined five commitments:

- **Practice decentering:** this commitment asks designers to view the world beyond our discrete selves as connected to a larger nonhuman world that is active and alive
- **Non-human participation:** consistently engaging with nonhumans as part of the process
- **Not-knowing:** designers should accept that they act from a position of partial or not-knowing
- **Queerly design alongside:** this commitment asks designers to consider how routine practices can be reframed to reveal new insights
- **Learn to be affected:** create the affective and knowing connections with more-than-humans

Key observations made by these designers are:
The backyard is a human concept, but to non-humans there is no divide between public and private nature. Due to our human habits, like not being outside due to weather or nightfall, we can never fully connect with the non-humans in the backyard. Despite this, backyard practices are a rather accessible form of design research that can pose great benefits for non-human and long term research.

Questions for discussion

1. How do the backyard practices described in the paper challenge who or what can be a participant in design? everything in a space can be a participant

2. What benefits, drawbacks and insights do you see in shifting research from controlled indoor labs to unpredictable backyard environments? closer to the real world involving a more representing group of participants

3. Access to private backyards is privileged and not universal. How might the principles discussed in the paper be adapted for people without such spaces and how might it affect the design process? a public place could be used. A backyard is a human concept. Other species don't know such boundaries.

Ron Wakkary, Doenja Oogjes, Oscar Tomico, Nazmus Sakib, and Ege Kökel. 2025. Backyard Practices: A Liminal Approach to Designing in More-than-Human Worlds. In CHI Conference on Human Factors in Computing Systems

Activity 1: attract – arrive – attune

Make groups of three. This activity helps us think about relations in a garden and how one element always draws others with it. By playing through these steps, we explore how to design for balance rather than control.

- Step 1 – Attract: Name something you want to welcome into the garden.
- Step 2 – Arrive: Another person adds something that might naturally come along with it.
- Step 3 – Attune: The next person thinks of a way to balance the relation.

Example: Water lily → mosquito larvae → fish that eat the larvae.

Discuss what this could mean for the dynamic in the garden.

attract

dahlia

arrive

snail

attune

blackbird that eat the snails

Activity 2: write a vignette

Find yourself a spot and take a non-human to tend to for a moment (e.g. water a plant or pick up a piece of trash). Try to see this not as an action you do to the non-human, but rather with the non-human. Did your activity go according to plan, or did another non-human or human alter your process somehow? Reflect on your backyard practice by writing a vignette.

A vignette is a short paragraph on a moment or observation. In the paper, vignettes are used to reflect on the human non-human relations that come to attention.

What unexpected things happened during your activity?

Would this activity be happening in the same way if the environment was more human controlled, like an indoor environment? How about if it was more non-human controlled, like the wild?

Non-human: trash bottle

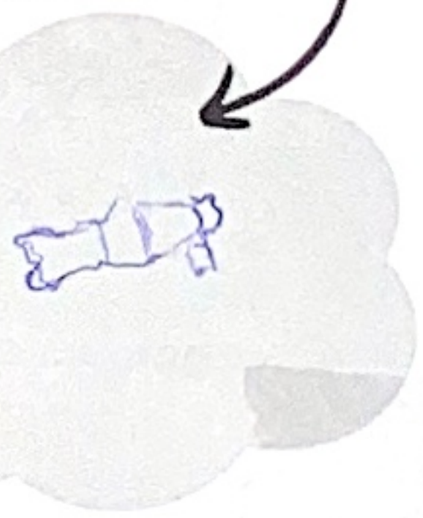
Activity: pick the trash and throw in the bin

Vignette:

I found a plastic bottle on the ground near the Dommel. It looked disgusting and must have been there for quite a while already. After some hesitation I decided to pick it up and drop it in the bin.

If there would not have been a bin nearby I wouldn't have picked it up. It would be too much effort

Sketch of your non-human



8

Group 8 (river growth)

DECENTERING THROUGH DESIGN: BRIDGING POSTHUMAN THEORY WITH MORE-THAN-HUMAN DESIGN PRACTICES (Nicenboim, Oogjes, Biggs, & Nam, 2023)

What is Decentering?

Decentering is a shifting away from human-centered design (posthumanism) to include more-than-human perspectives, agencies, ecologies and entanglements in Human-Computer Interaction (HCI).

- Origin: feminist posthumanism + critiques of anthropocentrism, binaries, and the humanist "ideal subject".
- Relevance: encourages humility, attunement, and care in engaging with nonhumans.

"*By decentering humans from design, I do not mean removing humans from the design process, or from the goals of design, but rather opening up design to include nonhumans and their lifeworlds, as well as our own, in design theory and practice*" (N. E. Smith, 2019, p. 12)

In English?

Instead of only asking *What do people want from this design?*, we should also ask *What about the other nonhumans involved? What roles do they play? What do they need? How are they affected?*. We should understand how human concerns are entangled with larger ecosystems and nonhuman agencies as a continuous process to encourage attunement, humility, and care.

What Did These Researchers Do?

- Looked at how designers and researchers in Human-Computer Interaction (HCI) are experimenting with decentering.
- Traced the idea back to posthuman theory (which challenges human-centered thinking).
- Collected examples from design practice (like designing with fungi, working with smart materials, rethinking 3D printing).
- Created a framework to help explain how decentering shows up in practice.

Five Dimensions of Decentering

- **Cornerstone**: What theory is the idea grounded in?
- **Crux:** What is being turned into a problem in need of a solution?
- **Constitution:** How can the human and non-human relationship involved be reconfigured?
- **Contribution:** What strategies, tools, or methods can be used?
- **Context:** What design community is involved?

Decentering is ongoing, you should embrace the discomfort and friction to find new ways to gain knowledge and design with it.

Group 8 (river growth)

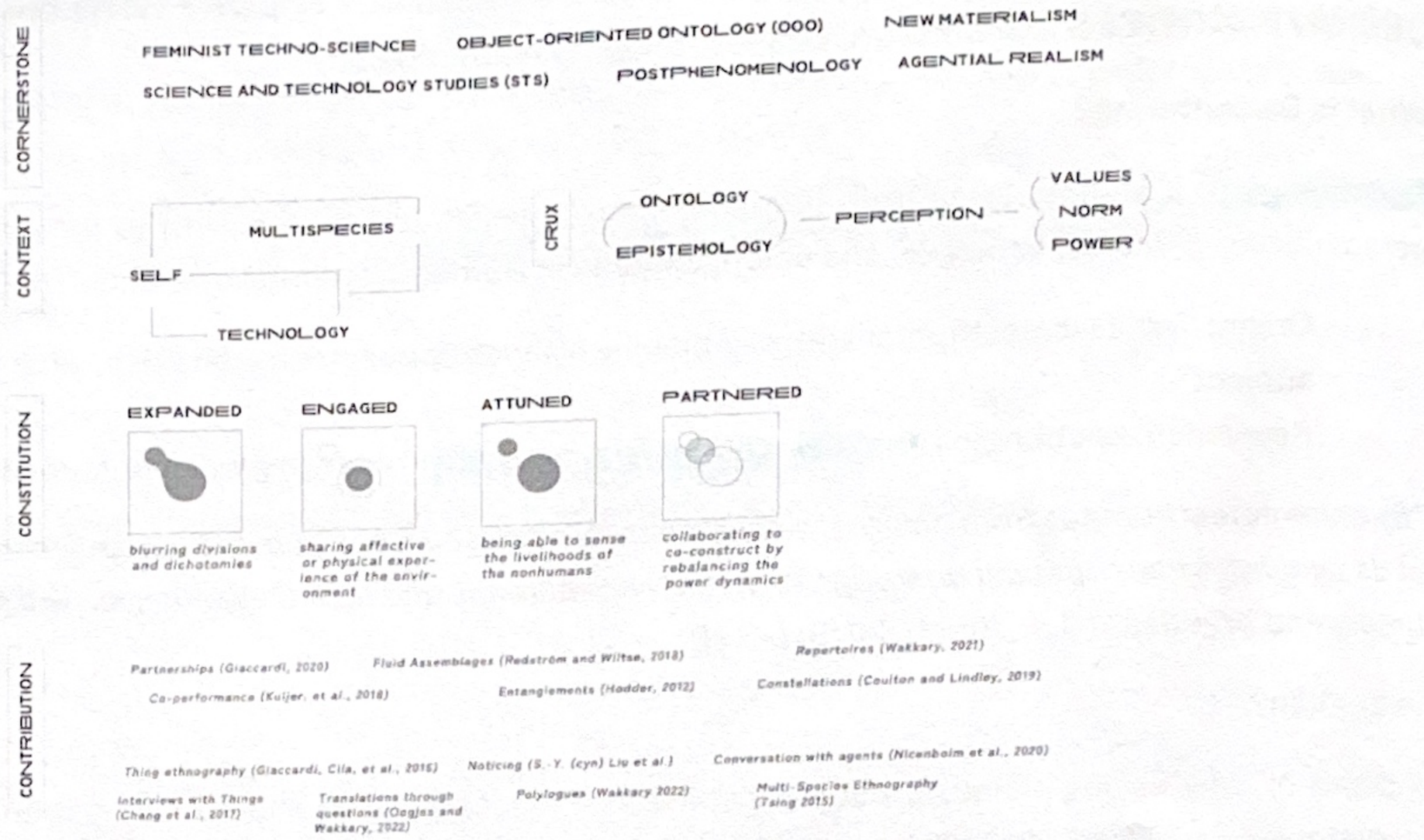


Figure 1. A document we produced while conceiving five dimensions for decentering (cornerstone, crux, constitution, context, and contribution) by reviewing literature from HCI and design venues.

Illustrative examples

- Bird-watching as a design method (Biggs).
- Weaving with material resistance (Oogjes).
- Speculative AI voice interactions (Nicenboim).

Questions for Discussion

1. Can humans ever truly "decenter" themselves, or is it always partial? I think it is possible, but it takes a lot of practice
2. What risks or blind spots might arise when we attempt to design *with* nonhumans? What's the difference between designing *with* nonhumans and *for* nonhumans? false assumptions might occur. How do you communicate with nonhumans? With → both benefit
   for → only the nonhuman should benefit
3. How might applying the five dimensions shift your own design practices?
   I think it will broaden the vision. Looking more at impact on others instead of only focussing on humans.

Activity Instructions

1. Pick an everyday nonhuman (plant, object, device, infrastructure, etc.) cactus
2. Imagine it as a Flintstones character: overworked, underappreciated. underappreciated.
3. Write what it might say after doing its "job", ending with: "...it's a living."

e.g. "I'm the office chair. Day after day you sit on me for hours. My wheels are clogged with dust bunnies and grime even though I still roll. Oh well... it's a living."

I am a cactus. I grow and make your house more beautiful while also giving you more oxygen, but I get nothing but water, the bare minimum, in return. Oh well... it's a living.





References

Nicenboim, I., Oogjes, D., Biggs, H., & Nam, S. (2023). Decentering Through Design: Bridging Posthuman Theory with More-than-Human Design Practices. *Human–Computer Interaction*, 40(1–4), 195–220.

READINGS

WEEK 5

9. Diffractive Interfaces
10. Knitting with Unknown Trees

Diffractive Interfaces

Summary

Cities increasingly use data and simulation models (agent-based models, ABMs) to manage urban forests. These tools usually focus on efficiency, for example carbon capture, shading, flood control, and treat forests as programmable infrastructure for human benefit.

Author challenges this by designing diffractive interfaces, which are the experimental ways of presenting forest data that make visible relationships, interdependencies, and more-than-human perspectives. Instead of focusing on a single "optimal" outcome, these interfaces invite people to notice how different agents (trees, soil, fungi, animals, humans) interact over time.

Their designs explore multiple scales:

Temporal: short-term (a single season) and long-term (decades of forest growth).

Spatial: a single tree, a patch of forest, the whole urban ecosystem.

Agential: including not just trees but also soil microbes, birds, water, and human caretakers as agents.

By combining these scales, the interfaces create layered and relational views, for example, animations that show how roots, rainfall, and human decisions overlap, or dashboards that let you shift between micro- and macro-level forest dynamics.



Takeaway

This reading is about rethinking how we represent ecosystems digitally so that we see forests not as objects to optimise, but as living systems we are entangled with. The goal is to slow down decision-making, make hidden relations visible, and help humans "think with forests" instead of just about them.

Key Ideas for Discussion

Attributes, Relationships, Events

- Attributes: individual features (tree height, soil moisture, canopy size).
- Relationships: how agents interact (roots stabilising soil, birds spreading seeds, humans pruning branches).
- Events: changes over time (storms, droughts, planting, growth cycles).

Thinking through all three helps us see the forest as a living network, not just a set of numbers.

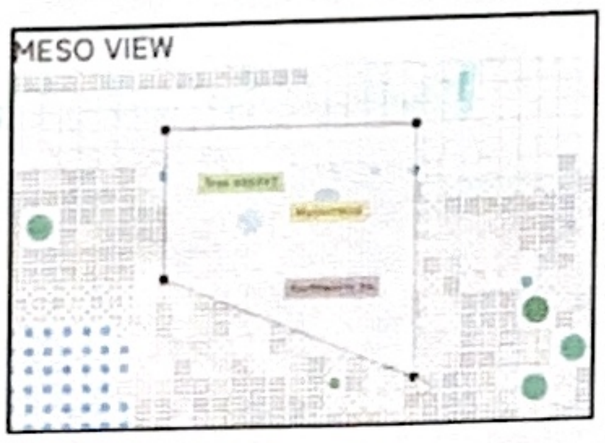
Three Views of the Forest:

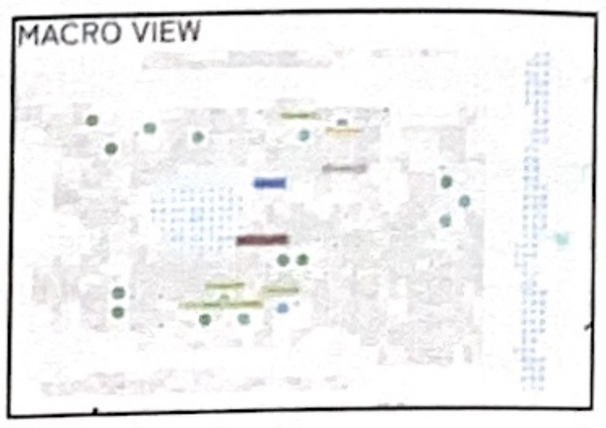
Micro, Meso, Macro

- Micro: look closely at one entity, its attributes and current state.
- Meso: group entities to see their relationships and how they depend on each other.
- Macro: step back and see the whole forest system and long-term events.

Moving between these views shows how a small event (e.g., cutting one tree) can ripple out to affect the whole system over decades.







Discussion Questions

Micro to Macro:

- How does a small-scale change (e.g., one tree dying) affect the meso and macro view over time? one tree starts rotting, might cause the trees around it to rot as well, (meso) which could cause the entire forest with its inhabitants to die or in need to leave

Seeing Relationships:

- How could interfaces make invisible relationships (soil microbes, water flow, animal behaviour) more visible to humans? interfaces can show to effects of changes in one thing on others (using numbers or colors)

Shifting Perspectives:

- What might you notice differently when switching between micro, meso, and macro views? Which view feels most "natural" to you? I think micro and meso feel most natural depending on what it is. Looking at trees you might see micro or meso But looking at ants you might see more macro.

Complexity vs. Action:

- Does adding these layers and views empower decision-makers to act more wisely, or risk overwhelming them with complexity? I think it does help and not overwhelm since it can be very structured and visualized.

Activity:

Zooming Disaster

Everyone speaks in turns. The first person states any disaster they wish and describes what happens to the TU/e (and Dommel) at macro level in one sentence. Each next person zooms in on the Dommel a little bit and gives a next statement which has to be connected to the consequence of the previous person.

For example: The TU/e terrain is flooded by a tsunami → Vertigo has fallen over into the Dommel → Because vertigo has fallen the trees have been crushed → The logs of the trees float through the Dommel, serving as lifebuoys for the architecture students.... .etc

This goes on until someone can no longer zoom in further. They may pick a new disaster to strike the uni!

it was really interesting to see how big disasters impact so many small things and not looking at humans in this process

Knitting with Unknown Trees: Alternative Ways of Knowing Urban Ecologies

The paper "Knitting with Unknown Trees: Assembling a More-Than-Human Practice" investigates how urban trees can be approached through more-than-human design. Using Amsterdam's municipal tree dataset, which contains around 260,000 mapped trees, the authors focus on 1,500 entries labeled as "unknown." Instead of correcting these gaps, they reframe the unknown as a productive space for developing alternative, relational ways of knowing. Their aim was to find resonance between material and data practices.

To explore this, they combine material and embodied practices such as tree-centered walks, bark rubbings, and knitting. These methods shift attention away from purely technological tools (like GIS, drones, and AI diagnostics) that usually measure and control trees, and instead invite more situated, tactile, and relational engagements. For example, bark rubbings allowed intimate contact with tree textures, knitting translated tree data into flexible material patterns, and walking disoriented participants from human-centered navigation towards multispecies encounters.

Through these experiments, trees emerge not as static objects or data points but as collaborators within polyphonic assemblages that include moss, ants, lichens, citizens, and infrastructures. The authors highlight the value of fragmented, open-ended design practices that embrace uncertainty, failure, and serendipity as part of working with nonhuman agencies.

Ultimately, the paper argues that more-than-human design requires humility and openness: recognizing trees and other nonhumans as active agents, learning to work with ambiguity, and fostering relational engagements that move beyond human utility towards shared urban ecologies.

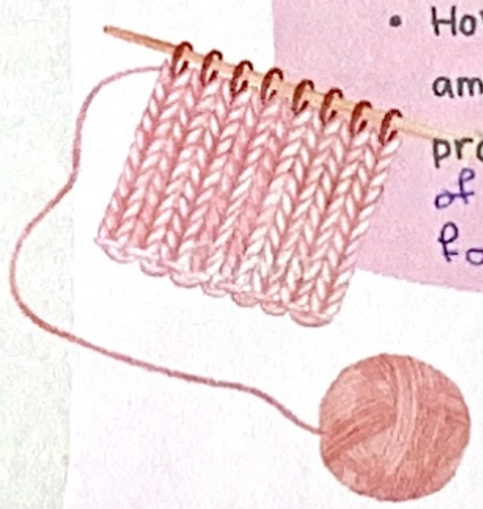


Key contributions:

- Alternative engagements: Trees seen as agents within polyphonic assemblages (with moss, ants, citizens, etc.).
- Material inquiry: Bark rubbings, knitting patterns, and walks help re-orient relations to trees.
- Fragmented practice: Embracing uncertainty, failure, and improvisation as part of more-than-human design.

Questions:

- What new perspectives can emerge when we treat "unknown" data not as errors to fix, but as opportunities for alternative ways of knowing? I think this leaves spaces for creativity and finding new opportunities
- How might craft-based practices (like knitting or bark rubbings) provide insights that high-tech tools (like sensors or AI) cannot? it is more accessible as well its a more embodied experience
- How can embracing failure, uncertainty, and ambiguity change the way we approach design projects in general? I think it is a good way of learning and leaves a lot of space for creative solutions





ACTIVITY



Goal:
Discover how trees can show us patterns and stories. By making prints and sharing them with friends, you learn to see the tree in new ways and notice how every person finds something different.

Supplies:
- paper
- pencils
- friends
- some imagenation



www.groeituin.be/opdrachten/opdracht-2/

Step-by-step plan:

Step 1:
Gather some friends and find a beautiful tree.

Step 2:
Grab your paper and pencil and make a print of the tree (just like in the image). This can be the bark, some roots or the leafs.

Step 3:
Look at the print that you just made and write down what you notice. This can be things like pattrens or bumps and holes. I would have expected a clearer pattern that looked more like the tree. It creates a quite vague image of it.

Step 4:
Give your print to one of your friends, let them also write down what they see and talk about these details.

Doenja Oogjes, Ege Kökel, Netta Ofer, Hsiang-Lin Kuo, Jasmijn Vugts, Troy Nachtigall, and Torin Hopkins. 2025. Knitting with unknown trees: assembling a more-than-human practice. In Proceedings of the 2025 ACM Designing Interactive Systems Conference (DIS '25). Association for Computing Machinery, New York, NY, USA, 119–134.

READINGS

WEEK 6

11. Watching Myself Watching Birds
12. What Comes After Noticing?

Watching Myself Watching Birds

Abjection, Ecological Thinking and Posthuman Design

Authors - Biggs, Heidi R., Jeffrey Bardzell and Shaowen Bardzell
Group 11 - Bas de Jong, Hannes Nijburg, Adam Bodor, Janneke Steenbergen, Janneke Mos

Summary

This paper explores birdwatching as a posthuman design practice within Sustainable Human Computer Interaction. Through an autoethnographic approach, field observation, journaling, creative making (sound/video experiments), the authors investigate how humans might decenter themselves in design and cultivate ecological awareness through encounters with birds.

Key Contributions

- Method & process: Birdwatching combined with journaling, soundscapes and experimental media to examine shifting perceptions of the non-human.
- Abjection as framework: Abjection explains the simultaneous fascination and repulsion in bird encounters, crucial to decentering the human.
- Design implications: Suggests that technologies can help humans develop new forms of attention, intimacy and sensory connection with non-humans.

Main Insights

- Noticing as method: Inspired by Tsing's "arts of noticing", birdwatching demands deep, sustained attention that produces awareness but also discomfort.
- Abjection: Feelings of alienness, monotony or overwhelm reflect how humans construct themselves against non-humans.
- Deep listening & ecological becoming: Recording and sound experiments blurred boundaries between self, technology and bird, creating "thick ecologies".
- Toward attunement: Over time, alienation shifted to connection and ecological intimacy, exemplified by a swamp encounter where boundaries between self and environment dissolved.



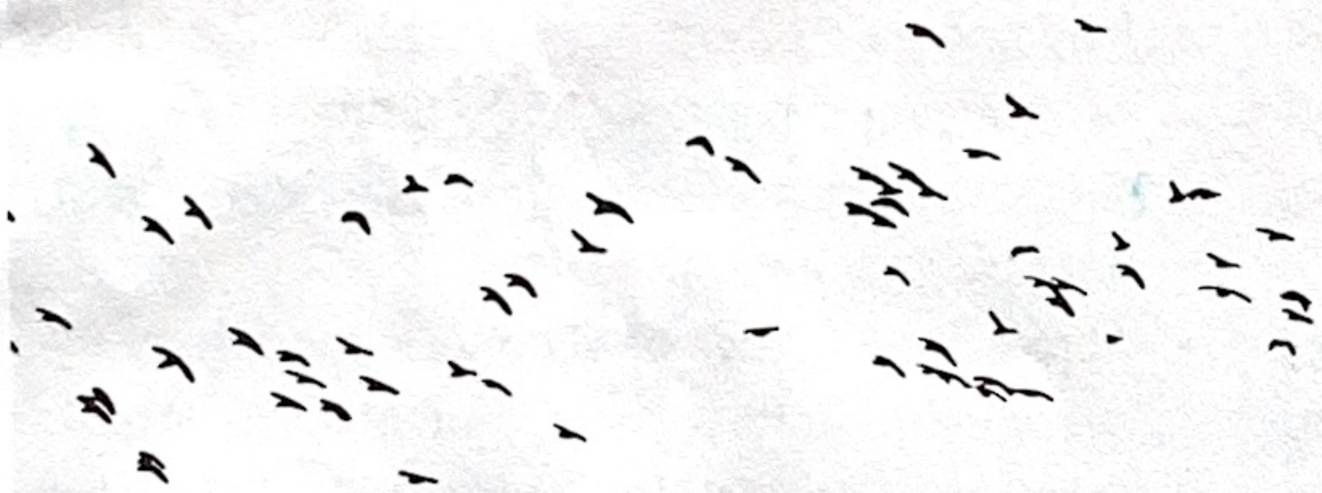
Decentralizing the human and acknowledging differences in realities

Discussion Questions

1. *How might the idea of abjection or feelings of discomfort and strangeness, open up new possibilities for design?* This makes people think about what the specific thing is that is annoying them. It is a reason to find new creative ideas to get rid of the discomfort

2. *How can technologies of listening or recording reshape how we attend to nonhumans? Might these tools create new forms of empathy and connection or do they risk reinforcing human-centered control?* I think it takes away distractions and makes you focus solely on the thing you want to focus on. I believe it can definetly create new forms of empathy.

3. *If posthuman design requires psychological and embodied labour, how do we build practices or tools that support this unsettling process for wider audiences?* I think that tools can be created for public using meaning that they should be easy and intuitive to use.



Activity

Reflect, meditate and have more-than-human awareness:

---

1. Pick something non-human around you, a plant, an object, a sound, could even be the air around you. Observe this non-human quietly for 2-3 minutes. plant

2. Note for yourself how you are observing it? What senses are you using? Are you framing it visually, emotionally, analytically? I started watching, then walking around it to see it from different sides, also looking at its shadow. I started noticing new things because I had to look at it very long.

3. Form pairs or small groups, and share your experience, what did you notice about the non-human? What did you notice about yourself watching? I noticed a lot of details that I had not seen in my plant and noticed that I wanted to see it from as many different angles as possible.

This relates to the papers idea of "watching myself watching", observation is never neutral and design begins with awareness of our own perception.

Reference

Biggs, Heidi R., Jeffrey Bardzell, and Shaowen Bardzell. "Watching myself watching birds: Abjection, ecological thinking, and posthuman design." In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems, pp. 1-16. 2021.

12

What Comes After Noticing?: Reflections on Noticing Solar Energy and What Came Next

By group 12

Summary

In the modern world there is an increasing separation between human and non-human that results in anthropocentric design. This article describes an exploration of the technique noticing to understand the non-human you are designing for.

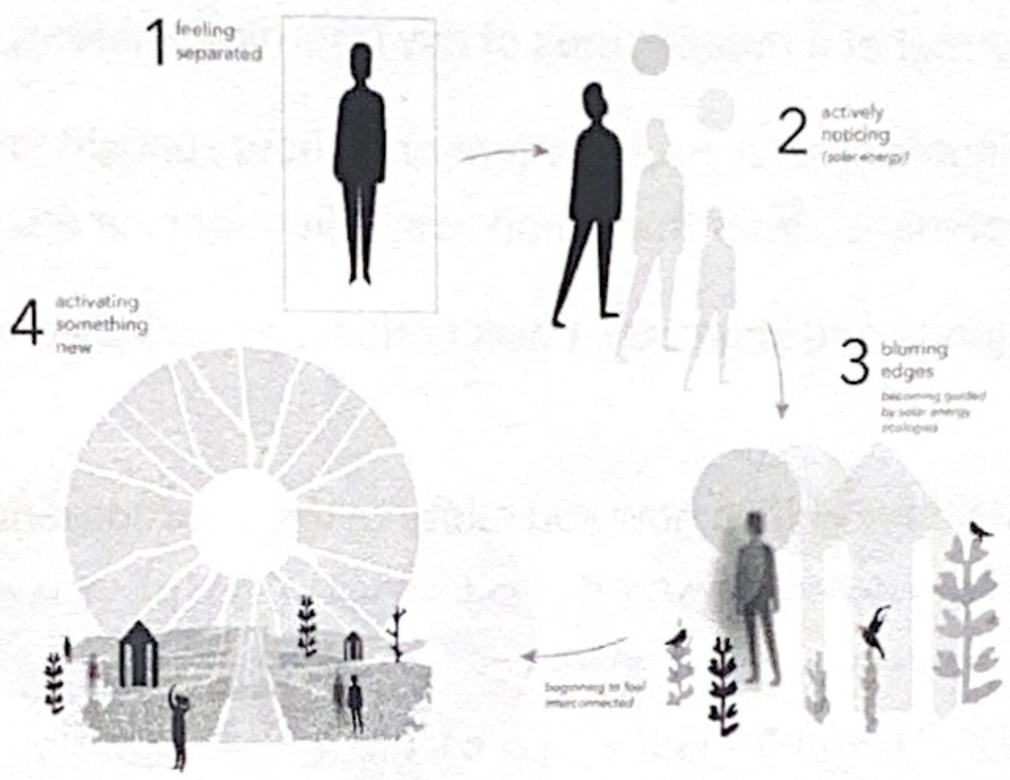


Figure 1 - The first author's depiction of the path she took through noticing solar energy: starting with (1) feeling separated, to (2) actively noticing, to (3) blurring her edges, to (4) activating something new.

In the first study the main author had to charge her phone solely on solar energy and use a device through which she could hear the suns energy. This had a direct impact on her daily life as she had was consistently conscious of the sun. She felt more connected with the sun as this became an reoccurring part of her life. This fostered new connections with other non-humans and made her feel interconnected. In the second study she decided to share her experience with other researchers. They walked around and listened to the sounds of the sun. She noticed how the participants were searching for sounds and exploring the solar energy. This experiment brought a more situated and embodied space to think about solar energy.

Lastly, the second and third author experimented with cohabiting with plants and meditating to create the same connection. They had a similar experience as the first author. However, when the study ended, the feeling of connection reduced quickly. So, it is important to use personal rituals to keep senses and connection alive. To conclude, the noticing technique can stimulate the feeling of interconnectedness and reclaim exile capacities. These values are important as an designer and therefore it is important to use sense fullness more in your design.

Key findings

- The authors suggest that noticing has the potential to awaken latent relational abilities in the observer, such as care, sensitivity, interconnection, and responsiveness. That are often suppressed by prevailing design traditions or habitual ways of perceiving.

Activity

Solar noticing walk

- Go outside together at different times of day (morning, midday, late afternoon).
- Spend 5-10 minutes silently paying attention to how sunlight interacts with surfaces, bodies, and materials. Its warmth, shadows, reflections, or absence.
- Afterwards, regroup and share what was notices, especially things you would normally ignore.
- Discuss: Did anything shift in how you relate to the environment after doing this?

I mostly looked more at how the sun creates an image of objects, namely their shadows. I came to appreciate the sun more in this, instead of (as I used to do) appreciating only the object causing the shadow.

Questions

1. How would we move towards a more post-anthropocentric society? And how would you implement this shift more in you daily life?

I think that humans should be made more aware of their surroundings and other species. This can already be by talking more about it.

2. What noticing method works for you and in what way would you execute it?

In my opinion sitting in silence and observing for a few minutes makes me notice a lot of small things and be more appreciative

3. In the article the authors say that noticing can wake up hidden strengths in us, such as feeling more connected to nature. What do you think these strengths can be for you? And how could they affect your daily life?

The connection and appreciated and calmness. It would be very beneficial I believe.

Source:Angella Mackey, David NG McCallum, Oscar Tomico, and Martijn de Waal. 2025. What Comes After Noticing?: Reflections on Noticing Solar Energy and What Came Next. In CHI Conference on Human Factors in Computing Systems (CHI '25), April 26–May 01, 2025, Yokohama, Japan. ACM, New York, NY, USA, 14 pages. https://doi.org/10.1145/3706598.3713239

READINGS
WEEK 7

13. Turner Boxes and Bees
14. Designing for Interdependence of Bees, Garden, Designer, and the Changing Season
15. This is a Solar-Powered Website, Which Means it Sometimes Goes Offline

13

Turner Boxes and Bees: From Ambivalence to Diffraction



The paper “Turner Boxes and Bees: From Ambivalence to Diffraction" is about a research project, called research through design or RtD for short. The goal is to create technologies to let people be able to interact with bees in cities. Different from other projects the authors wanted to explore how design could include the needs and lives of other species, in this case the bees, instead of having a human centered view.
While working on the project the researchers found three tough choices where there wasn’t a clear choice or right answer:

- Electromagnetic Fields: For their design the authors had to use electromagnetic fields, but could it be that they accidentally harm the bees health with that?
- Sucrose Feeding: To attract the bees they first wanted to use sugar water, but is this ok since it might make the bees dependent on humans instead of natural food sources?
- Human Intervention: Should we as humans even step in and interfere with the lives of bees or should we leave them alone and only coexist with them? And if we interfere should we design to try and control the bees or only manage them?

Ambivalent is what the authors decided to call these situations, which means that they felt pulled in different directions unsure of the best choice. Instead of seeing this as an obstacle and problem the authors decided that this could actually be helpful. It forces designers to stop and think more carefully about what they are designing for, the influence it has on other species and how complex that can be. It makes designers have more ethical reflections, be more responsible and make more thoughtful decisions.
To make this way of designing more concrete the authors introduced the idea of diffractive design. Diffractive comes from the physics terms, but is in this case used as a metaphor. It is about how instead of just reflecting, diffractive design is about looking at how different perspectives overlap and interfere with each other, which create new patterns of understanding. For this specific project it is about recognizing how humans, bees and the environment are interconnected and finding a way to design that respects those entanglements.
In short, the paper argues that good design for multispecies worlds isn’t about finding simple answers. It’s about learning to live with uncertainty, ambivalence, paying attention to ethics, and designing with an awareness of how humans and non-humans are always shaping each other.

Questions for discussion

1. How can ambivalence be productively used in design practices, especially when working with non-human species? letting uncertainty and obstacles guide the process by embracing it. it makes the designer think differently.



2. To what extent should human designers intervene in ecological systems, should design aim to “help” species, or focus on coexistence without control?
no significant harm should be done. Both helping and coexisting in an ecological system can be good. Even though things might not be natural anymore, as long as it is not too human-centered.
3. How could diffractive approaches change traditional design methods so that they better consider the relationships between humans, animals, and the environment?
By looking at the entanglements, designers can become more aware of how a design for one relationship might influence other things or species in the ecosystem.



Creative Exercise: Seeing Through Another Species

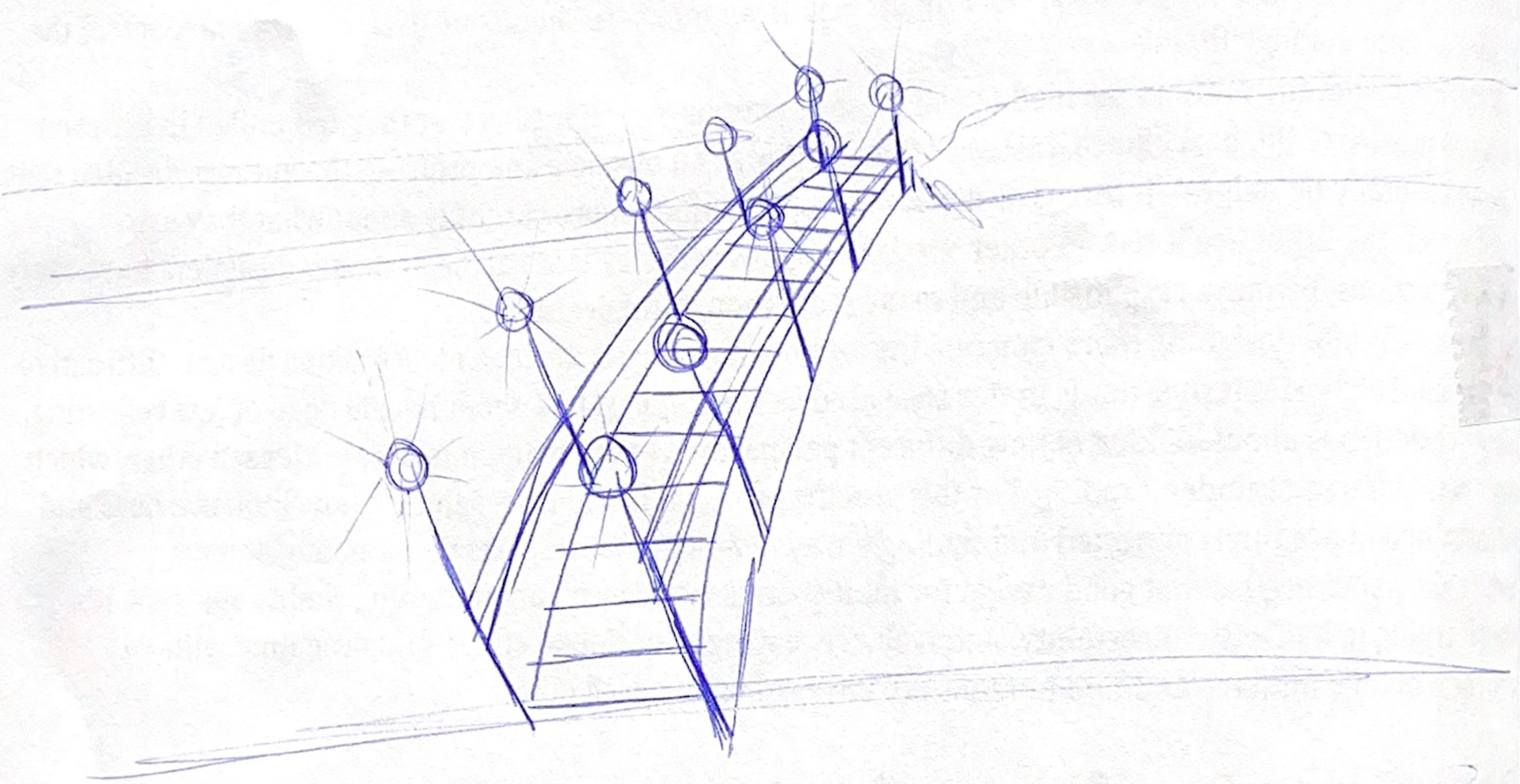
Choose a simple everyday object, like a park bench, a streetlight, or a garden space.

Step 1: Imagine how this object might look, feel, or function from the perspective of your kin.

Step 2: Make a quick sketch or doodle of the object from your kin. Think about:

- How does size or scale change?
- What senses (smell, vision, sound, vibration) might matter most?
- Would the object seem helpful, harmful, or irrelevant?

Step 3: Write down one short sentence reflecting on how imagining this other perspective changed the way you see the object.



street lights would feel useless for the bridge. the bridge cannot see light and it wouldn't be the same effect as the sun, which gives the bridge heat, which does have effect on the materials of bridge

This exercise connects to the paper's idea of moving beyond human-centered design and recognizing the entangled perspectives of humans, animals, and the environment.

through the perspective of the bridge, street lights would not be useful. It might only change its rythm because more people might walk over it in the dark



14

Designing for Interdependence of Bees, Garden, Designer, and the Changing Season



Group 14

[1] Yuta Ikeya, Miguel Bruns, and Bahareh Barati. 2024. Designing for Interdependence of Bees, Garden, Designer, and the Changing Season. In Proceedings of the 2024 ACM Designing Interactive Systems Conference (DIS '24). Association for Computing Machinery, New York, NY, USA, 1385–1399. https://doi.org/10.1145/3643834.3660743



Figure 1 : Finished prototype of the beehouse [1]



Summary

Designing for interdependence: Celebrating and enabling more-than-human relationships, and creating designs which have a positive influence on the ecosystem. Designing in a posthumanist sense.
Repertoire: noticing non-human actors to develop ways in which humans and non-humans can design together
Emplacement: being in a place to embrace relationships present

The Process

Yuta Ikeya created a garden for pollinators as a hobby. He introduced red mason bees by buying cocoons, which became his test subjects for this study. He documented his process and activities from a first-person perspective to reveal 'often overlooked details'. His activities were based on the previous results, creating an everchanging process.

Red mason bees / Osmia Bicornis: solitary, females have own nest, make individual chambers in nest-holes with clay from mud for their larvae

Ikeya wanted sensors to collect data within the beehouse. The building of the house had to be sped up because of the warmer weather and the accumulated activity of the bees. The house has a traditional beehouse form to guarantee a successful nesting of the bees. It is also organism-centered because of the materials being according to the bees' natural habitat.
It didn't go fully according to plan and the order of building and times were changed. He ended up working while bees were asleep to not disturb them too much. He learned working in bees' presence and changed his routine to suit them.
Because the bees rely on vision and therefore respond to changes around them, they may leave or not be able to locate their nest after the environment around it has changed.

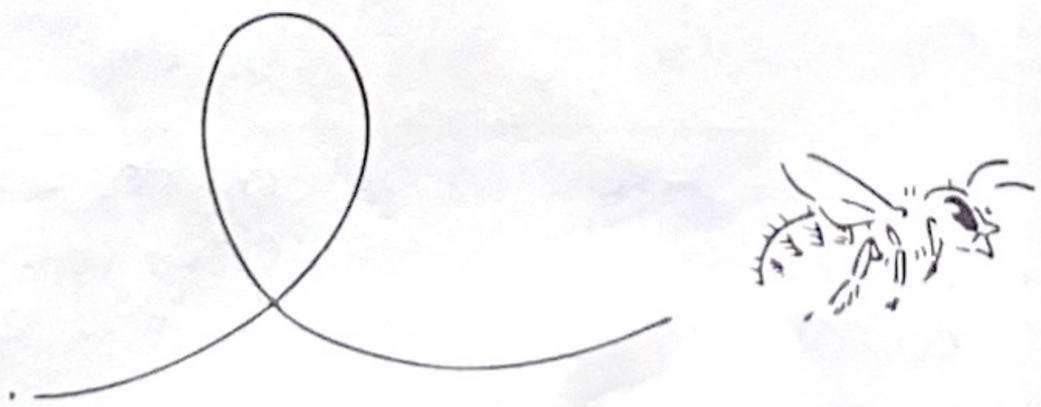
Collective pottery wheel speculation: This idea adds another layer to the whole design: sharing of material. 1) Humans use it for pottery 2) it stops rotating when bees leave their nest 3) Bees could use the clay for their nest. This gives some agency to bees by interrupting humans' activities.
This idea didn't work, as the bees weren't going towards the clay. There could be several reasons why the bees did not accept the presented "pottery-clay". An effort was made to find the source of their preferred clay, but the bees are hard to follow, and their season ended soon after.

The author now knows that some things need to change; the mud/clay and how it is set up, the bee house needs water protection, and bringing the bees in should have been considered more (small space, many bees).
He is iteratively designing the activities and his garden for the next season.

Key Insights

Not being in full control decentered the FA within the research, as he had to work with the bees' schedules.

Not everything is known; why the bees did not like the clay, but also if bringing the bees into his garden was good for the ecosystem.



Discussion

The First Author of this paper brought bees into his garden. Do you own any plants, and which non-humans do they bring into your environment? How do you feel about them living there?

I own many plants. They bring aphid into the environment. It harms the plants, but aside from that they don't influence my life in the environment.



When designing with nonhumans there is always a chance for unexpected behaviour to occur. How could you respond adequately, and has this happened with your groups nonhuman kin?

Since our kin, the bridge, is not a living organism, it does not show a lot of behavior by itself.

What is one advantage of considering how humans can be interdependent with nonhumans rather than attempting to master or conquer nature?

Humans can learn from the behavior of the nonhumans by cohabitation and observing.



Activity Introducing a nonhuman

Choose a living nonhuman

Sketch out your room, garden, or environment
How would you prioritize the nonhuman in your living space?

Draw or sketch features you would add to your space, where would you put them and why? (think of: a bee house, plants, a pond)

Speculate: What other nonhumans would likely be introduced by changing your environment this way?

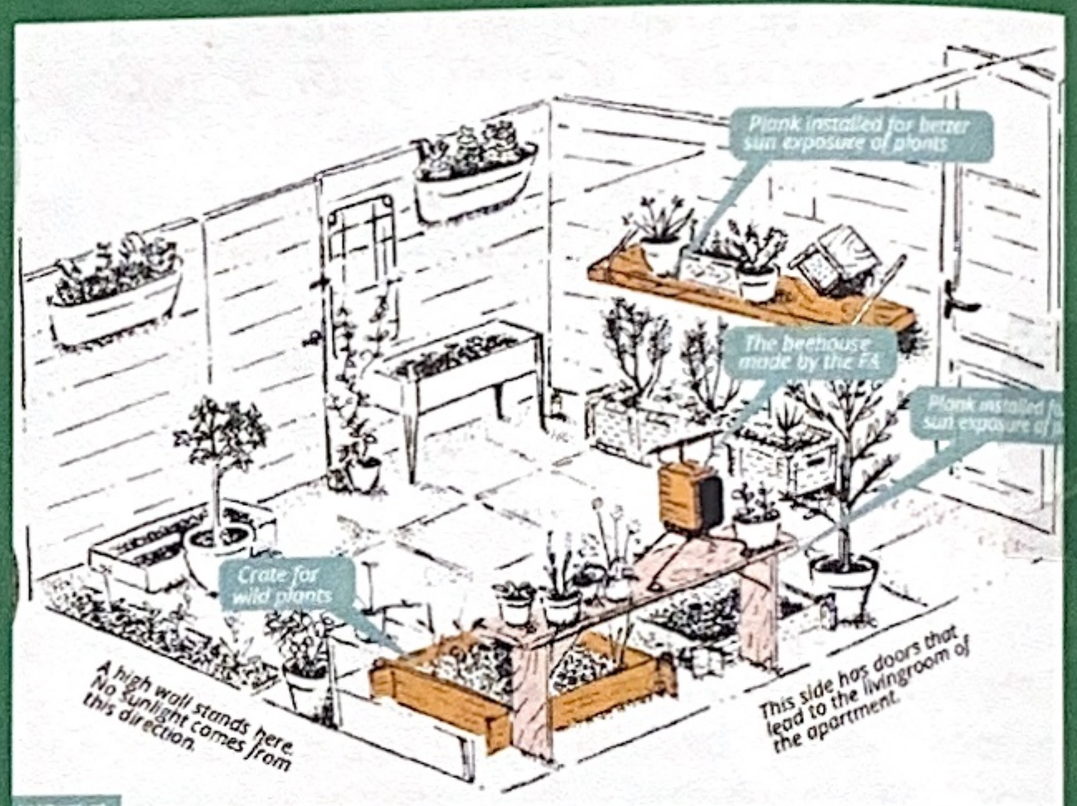
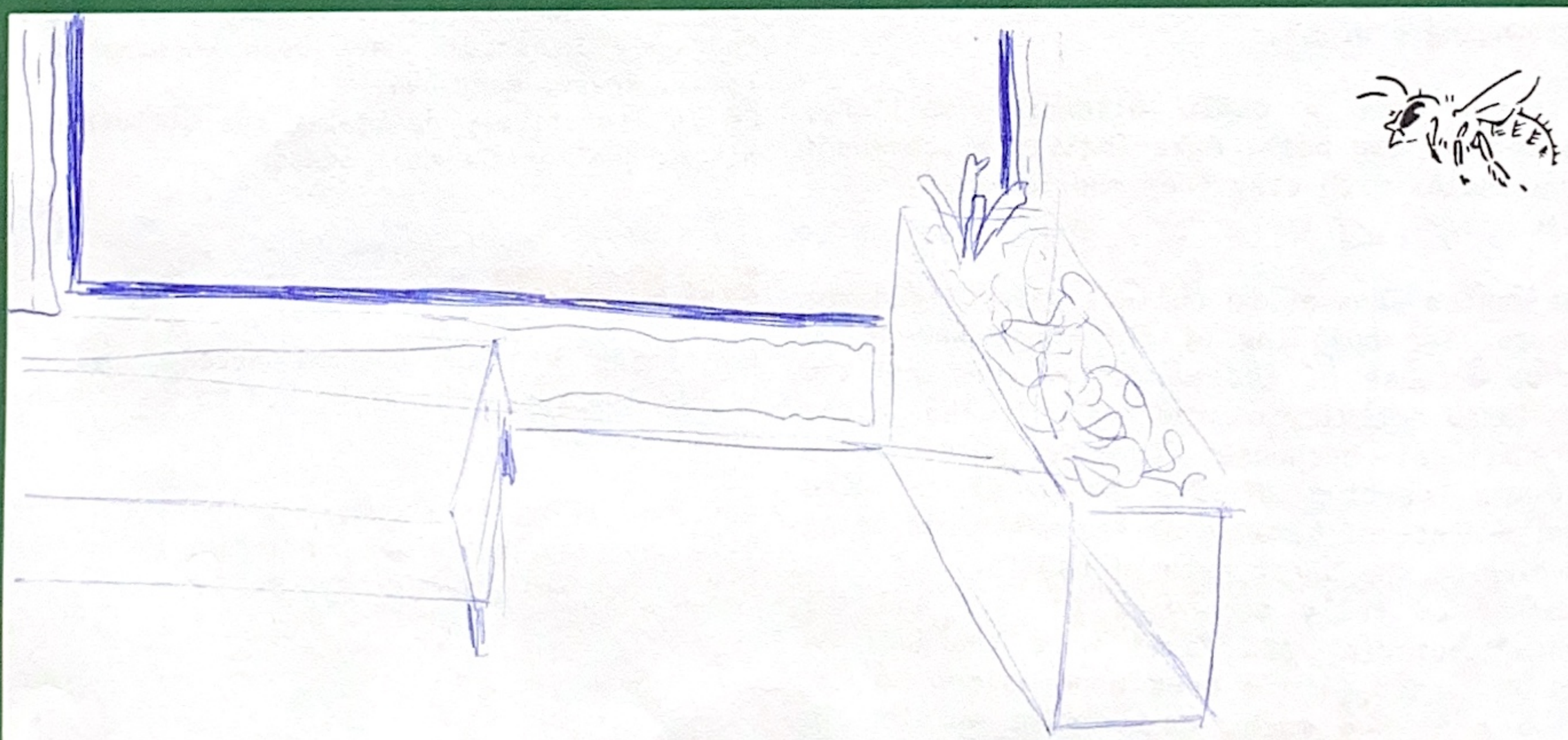


Figure 2 : Example from the Reference Paper [1]



the plant would get more soil, inviting more organisms and nonhumans in the environment. Adding more species of plants could change things in the ecosystem.

THIS IS A SOLAR-POWERED WEBSITE, WHICH MEANS IT SOMETIMES GOES OFFLINE



Imagine a website that embraces its own limitations. It's not always online and it goes to sleep when it's cloudy. This isn't a bug but a feature! This is the core of the solar-powered Low-Tech Magazine website, a real-world experiment that asks a question: **What would the internet look like if it were designed for an energy-constrained world?**

The article explores this project as a practical application of **degrowth principles** to web design. Degrowth, in this context, means intentionally reducing the energy and material throughput of a system while improving the quality of the experience.

The project's key points are:

- **Embrace intermittency:** *The server runs on a small, off-grid solar panel in Barcelona.* Instead of aiming for 99.99% "uptime" (which requires massive, energy-intensive backup systems), the *site accepts being offline about 5% of the time.* A *battery meter* and *weather forecast* on the site itself reset user expectations, framing downtime not as a failure, but as a ***natural rhythm***.

- **Be efficient:** The site is a *static site.* This means it's a collection of pre-built files, not a complex app that rebuilds pages for every visitor. This makes it incredibly lightweight and fast. The team applied a ***degrowth heuristic*** to common web advice: they aggressively *limited data transfers, avoided heavy client-side processing and ditched third-party services.*

- **Design for the past, not the future:** The site is mainly designed to work on 10-15-year-old devices and slow networks. This ***fights planned obsolescence*** and makes the *content more accessible* to people with less powerful hardware or expensive data plans.

- **Enable offline use:** The site makes clever use of browser built-in storage and provides a complete downloadable list of all its articles, allowing readers to *build a personal, offline archive* of the magazine's content.

The main argument is that **degrowth isn't just about doing less but it's about designing smarter**. By intentionally limiting resource use, the project created a website that is not only lower-energy but also faster, more robust and more equitable. It's a provocative blueprint for a slower, more mindful, and sustainable digital future.



Discussion questions:

- What's one small change you could make to your own online habits to use less digital energy?
- Is there already something you do to reduce your digital energy use or environmental footprint?

- closing tabs that are open or lowering the brightness of the screen
- I try to lower my unnecessary screentime

- What happens when the sun and weather become part of the design team?
- Can downtime, slowness, or unpredictability be seen as acts of care rather than design failures?

- it is [redacted] limiting but might give new insight in how websites are used and when.
- depending on the goal of the website, it can either be a failure since it should be usable 24/7, or it can make people aware of the site usage

Quick Activity:

Designing with Limited Energy

Goal: To experience what it means to design digital systems with limited energy, like the solar-powered Low-Tech Magazine website.

Step 1: In pairs, imagine you are designing a website that runs only on solar power. You have 5 energy coins to spend on features:

- Video autoplay (3 coins)
- High-resolution photos (2 coins)
- Sound or background music (2 coins)
- Offline mode (2 coins)
- Custom fonts (1 coin)
- Dark mode (1 coin)
- Search bar (1 coin)

Reflect: Why did you choose these?

most options. the others are not really necessary so why spend this much on them

Step 2: Turn on Airplane Mode for 2 minutes. Sit quietly or draw what comes to mind.

Reflect: How does it feel to disconnect?
What can we learn about designing for slower, simpler, or more mindful digital experiences?

Roscam Abbing, R. (2021, June 14–15). *"This is a solar-powered website, which means it sometimes goes offline": A design inquiry into degrowth and ICT. In LIMITS '21: Workshop on Computing within Limits.* Malmö University.

Final Personal REFLECTION



At the start of this course, I saw the Dommel as the water that flowed alongside the TU/e. Throughout the weeks, I started noticing more of what the Dommel included as an environment. The Dommel is not only the water, but also the soil, plants, waste, animals, sun, wind, rain and everything entangled with it.

When thinking of the non-humans in and around the Dommel, I first only noticed the plants and animals in and around the water. In the cyanotype workshop I started noticing how the sun and wind are also part of the Dommel and have an influence on the non-humans in the area. In the weeks after, when focussing more on the interconnectedness of individuals, I became more aware of how the Dommel really is an ecosystem. In the 'phone as an observation tool' tutorial, I started feeling more connected with the individual organisms. Just like knowing/learning the name of someone you meet makes you feel more connected with them, this was the same feeling for learning the names of these non-humans. During the tutorials for the herbariums, natural dyes and texture rubbings, I noticed a change in how I approached non-humans and how I interact with them. I became more careful and mindful in how and where I placed my feet, since I was thinking more about the impact of my feet on the plants. The texture rubbing tutorial was eye opening for me, because I realized how little attention I was paying to smaller details. Even though I have seen many trees and noticed the bark before, I never consciously thought about how the texture feels and how these patterns form a sort of art.
The kin my group and I worked with was the bridge, which is made by and for humans. This made it hard to shift away from the anthropocentric view. By learning more about the bridge using different methods like writing a letter full of questions to the bridge, trying the becoming exercise and mapping out the entanglements, the bridge became more than just a tool to cross the water. How I interacted with the bridge drastically changed during the course. In the beginning I would step on the bridge and feel the vibration a I walked over it, which made me want to jump. But after getting to know the bridge and creating a connection, I tried to carefully place my feet and feel the bridge, the sun, the wind, and hear the water and birds as I walked over it.

My idea of design has definitely changed since following this course. Design is more than just creating products for humans to use. Not everything we make needs to have value for humans. Things can also be designed with or for non-humans. Even when products are designed for humans, they might affect others as well, considering all the entanglements. As designers we create a lot of new products, in many cases they are unconsciously harming nature. As a designer, I want to be more careful with how my design has an impact on nature and I want to explore how I could give back to non-humans in nature.