

Posthuman Data as a Material for Design

Iohanna Nicenboim
Delft University of Technology
i.nicenboim@tudelft.nl

Elisa Giaccardi
Delft University of Technology
e.giaccardi@tudelft.nl

The posthuman turn is radically shifting design research practices, changing the focus of design from humans and products to ecologies and relations. In response to those efforts, this pictorial presents a series of design engagements, around dialogs, voices, and silences, to reflect on what posthuman data might be like, and how could designers encounter it and use it as a material in their practices. Based on the design engagements, we draft a few qualities of posthuman data as entangled, material, performative, decentered and decolonial.

Introduction

“How do we hear, and how do we encourage others to hear, the non-human voices?” [5,p.3].

This question reflects one of the challenges of designers and scholars in the posthuman turn, which is how to encounter and make sense of posthuman perspectives, knowledge(s), and temporalities. Expanding data practices in design from humans to ecologies is urgent to address the current crises, i.e., from the climate condition to issues of discrimination that are amplified by the pervasive use of probabilistic technologies [6,30]. Designers and HCI researchers have been addressing those challenges by shifting from user-centered to more-than-human approaches [8]. While the turn is grounded in theoretical developments within the humanities that question the traditional construction of the human and challenge anthropocentrism [3], designers and researchers have developed concepts and methods to decenter the human and design for and with more-than-human entanglements [15,30].



Encountering more-than-human data

To begin to understand how posthuman data might be accessed, we reflect on a series of experiments that aimed at listening to more-than-human voices. We organize them in two parts: enacting responses and enacting silences.

Enacting Responses

To explore the entangled relations between humans and AI, we enacted and interviewed voice assistants (Alexa, Home, and Siri) in a workshop at the DIS2020 conference [21]. The workshop highlighted that in current interactions, digital assistants are designed as functional tools and not really conceived as agents, because they are not situated, i.e., they do not account for their viewpoints, their limitations, and the human-nonhuman infrastructures that support them. To explore more situated responses, we designed a series of conversations that translated the Anatomy of an AI map [37] into responses for Alexa. The conversations were depicted in videos with images from different sites in which the Amazon Echo devices are produced [38]. This experiment helped us to question the anthropocentric logic of voice interactions and exposed the limitation of voice interfaces to recognize more-than-human voices while also highlighting the fact that those voices are filtered out as 'background noise.'



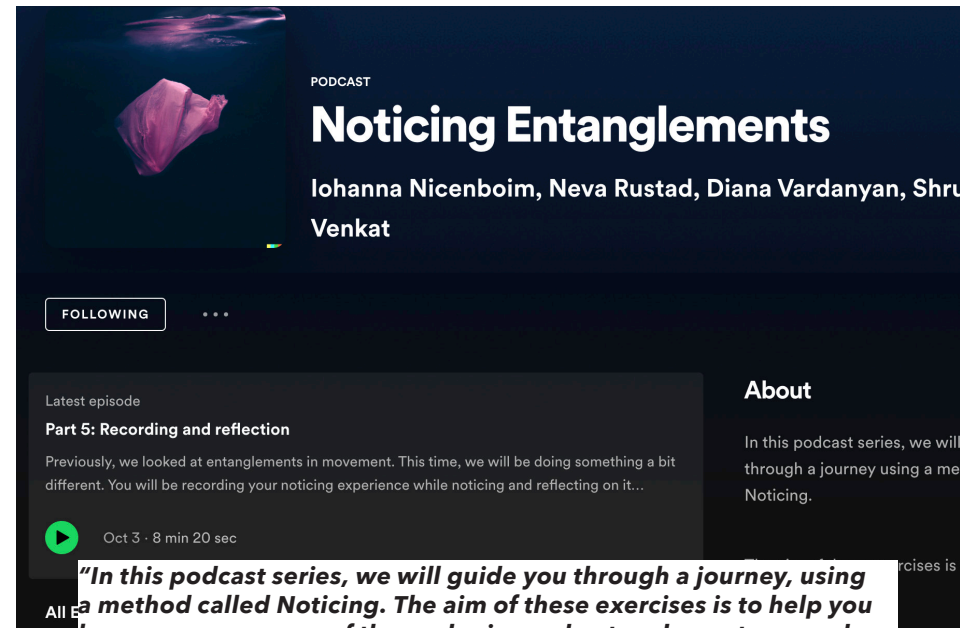
To explore alternative ways of listening and responding, i.e., ones that could be more plural and inclusive, we engaged in an artistic collaboration with a composer, a group of six human artists from different disciplines and countries, and three Amazon Alexa smart speakers. Using the perspective of 'decolonial listening' from Rolando Vázquez [33] we did activities around deep listening and improvisation. Taking a decolonial approach to the act of listening, and inspired by the work of the composer John Cage on silence [12], we composed a performance piece. The score, only based on questions, was divided into three movements. First, the performers improvised questions to Alexas, then the performers questioned Alexa's responses (with the questions generated in the first workshop), and finally, the performers responded to the questions with movement, sound, and their voices in different languages.



Enacting Silences

The experiments of enacting more-than-human voices not only helped us to understand the limitations of technologies we use to engage with posthuman data, but they also reframed what the absence of data might imply. Thinking about the voices that are not listened to by conversational agents, reframed the silences of these devices from passive moments to active acts of listening, and more importantly, to active acts of silencing. Thus, the experiments helped us to critically reflect on who and what might be heard and who and what might be silenced by AI systems.

On the other hand, we were curious about the affirmative directions that silences could open up as a novel design space. To unpack the opportunities of silence for design, we attended a silent march from Extinction Rebellion [35] and conducted interviews with the participants and organizers. The silence was for the rebels a disruptive way of protesting, but also a space for reflection that is intimate and shared. Silence in that march was used as a non-violent tactic for dissent, which allowed people to reflect, and gave space for silenced voices to emerge.



PODCAST

Noticing Entanglements

Iohanna Nicenboim, Neva Rustad, Diana Vardanyan, Shru Venkat

FOLLOWING ...

Latest episode

Part 5: Recording and reflection

Previously, we looked at entanglements in movement. This time, we will be doing something a bit different. You will be recording your noticing experience while noticing and reflecting on it...

Oct 3 · 8 min 20 sec

About

In this podcast series, we will go through a journey using a method called Noticing.

All episodes

rcises is

"In this podcast series, we will guide you through a journey, using a method called Noticing. The aim of these exercises is to help you become more aware of the ecologies and entanglements around you, so you can expand your design practice from user-centered to more-than-human. This guide will help you to be more sensible to non-human agencies within your environment while decentering your perspective so you can start designing with"

"Sitting quietly, look slowly around you wherever you happen to be. Take in each sight and thing as it presents itself to you. Try not to label or think about what you see. Attempt simply to gain a sense of presence and its part in this environment. We will be quiet now for about 30 seconds while you take in your surroundings"

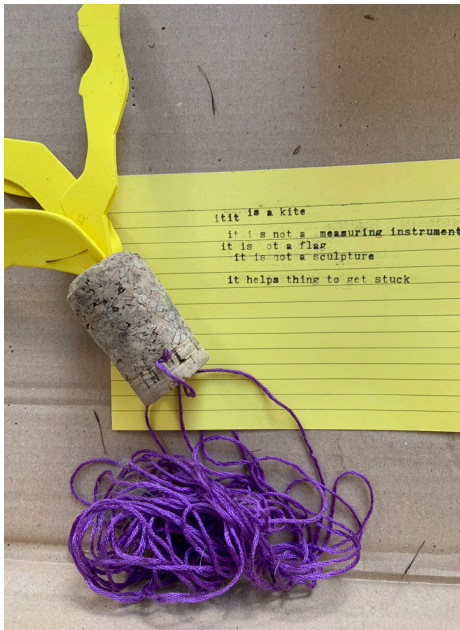
To further explore silence and listening as ways of noticing [2,20,22] and based on the experiences of Biggs et al. [2], we engaged in a process of decentering the act of listening. We conceptualized two ways of doing that: one as 'decentered listening,' i.e., expanding the range of voices one hears, and the second as 'decolonial listening,' i.e. listening to voices that were normally silenced. To probe how this way of listening could help designers, we created a series of audio guides to notice entanglements. Starting from noticing still and distinct things and moving towards fluid entanglements, the exercises guide the listeners to practicing noticing while also encouraging them to reflect on possible resistances along the way.

Designing with more-than-human data

To reflect on what designing with posthuman data might be like, we present two more design engagements. One is a process of making kites with local materials as tools for rehearsing conversations with more-than-human agencies, and the second is a design fiction that explored how conversational agents can be designed to listen and respond to more-than-human voices.

Kites for more-than-human dialogs

This experiment started with the aim of capturing sounds of human-nonhuman entanglements, for example, the wind as it moves a piece of manufactured metal. Later, inspired by Tim Ingold's metaphor of kites [17], it drifted to a process of making kites as tools for engaging with nonhuman agencies. The kites, which were not only for wind but also for water and seeds, were used as tools to attune to more-than-human forces while also reflecting on the designer's role in more-than-human choreographies.



Conversation Starters

This project was a series of design fictions to probe how to listen to more-than-human voices. In one of the scenarios, for example, an agent creates bedtime stories with the more-than-human sounds it captures around it. In another scenario, the agent orders food for the plants instead of humans. Thus, the agents do not only capture more-than-human sounds by attending to 'silenced' voices but also respond to them by making new stories.



What are the anthropocentric assumptions encoded in the tools designers use to engage with data as a material? What tools are useful to engage with data as relational and situated? How can design help to listen and respond to other-than-human voices? How can designers become more attentive to their role in more-than-human data practices?

These are some of the questions that these experiments and engagements with posthuman data bring to the front. In what follows we list a series of qualities for posthuman data as provocations which we hope to develop further by engaging with other researchers in the workshop.

Entangled While engagements with data are traditionally organized in ‘capturing’ and ‘sense making’ of data as relatively distinct parts, these are entangled when we think of creating dialogs. The entangled nature of posthuman data can be expanded for example, in relation to Redstrom’s proposition of making design theory [26], Frauenberger’s entanglement theories summary [11], Giaccardi’s discussions on how research-through-design intersects with more-than-human approaches [13], and Wakkary’s notion of nomadic practices [29].

Performative Enacting can be a designerly tactic for engaging with data as entangled and situated. Silence can be an interesting space for reflection and listening can be a radical practice. This can be expanded in relation to posthuman theory, especially the concept of performativity (Barad) and Ingold’s correspondences and conversations with matter [17] to media studies and the notion of unstable media (ref.) and accidents as opportunities for new understandings [16], and HCI notions of co-performativity [19], design-led experiments with audio [2,31], and performance art [9].

Material Making can be a designerly way of making sense of the dialogs and correspondences with things and other species. Posthuman data can be materialized through design, for example by making visible the relations and hidden ecosystems of things, and by critically examining the technologies we use to reveal hidden anthropocentric processes of alterity, i.e. making others. This can be developed further in relation to different strings of new materialism Barad [27], Bellacasa [34], Ingold [17], as well as to the notion of the geology of media [24], and new materialist informatics [18]. Specifically, this could be expanded through the projects that attend to materiality and temporality taking more-than-human approaches [1,22,23,25,32].

Decentered Data practices can be decentered for example by using tools and tactics that allow designers to listen to entanglements, noticing sounds that we as humans normally do not perceive. This means, expanding the range of data to capture and avoid filtering nonhuman data by default. Beyond its relevance for the posthuman community in HCI [6,8], and the methods of noticing [2,20,22] and thing ethnography [14] this can also be discussed in relation to data feminism [10] and feminist datasets [39].

Decolonial Data practices can be decolonial if they capture data that have been displaced because it was not considered ‘worthy’ to be captured or it was omitted in the processes of making sense by not being a matter of concern. As affirmative directions, designers can get inspiration from how the sociologist Rolando Vázquez approaches decolonial listening [4], i.e. to perceive and attend to the alternative voices silenced by modernity, and hearing the relationality of all entities before they are formed into subjects and objects through racial, economic, and extractivist logics. This quality can be also expanded in relation to the decolonial turn’ in critical technology and data studies [7] and design [28,36].

Concluding Remarks

These qualities, and the more-than-human engagements with data that were illustrated in the pictorial, highlight that for adopting a more-than-human approach to data as a material for design, it is as important to capture a wider range of data that goes beyond humans. It also highlights the importance to recognize the situated character of data, and the political agency of the bodies that produce it –as well as the bodies that are affected by it. This, in turn, opens up a space for reflection on how working with data as a material for design can enact alterity, and decenter others, by processes of forgetting, omitting, and excluding, which has implications for example, for how technologies that rely on data are designed –by capturing only human-centered data, AI-based technologies might decenter ecologies, nonhumans, as well as humans as ‘others.’ At the same time, it opens up a space for design as a field that can encounter posthuman data, i.e., data that is situated within material relations, through enactments, acts of listening, and acts of making.

1. Jesse Josua Benjamin, Heidi Biggs, Arne Berger, et al. 2023. The Entoptic Field Camera as Metaphor-Driven Research-through-Design with AI Technologies. arXiv [cs. HC]. Retrieved from <http://arxiv.org/abs/2301.09545>.
2. Heidi R. Biggs, Jeffrey Bardzell, and Shaowen Bardzell. 2021. Watching Myself Watching Birds: Abjection, Ecological Thinking, and Posthuman Design. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems. Association for Computing Machinery, New York, NY, USA, 1–16.
3. Rosi Braidotti. 2019. Posthuman Knowledge. Polity.
4. Emily Clark. 2021. Sound, colonialism, and decolonial listening. FOCUS On Sound 1.
5. Rachel Clarke, Sara Heitlinger, Ann Light, Laura Forlano, Marcus Foth, and Carl Disalvo. 2019. More-than-human participation. Interactions. Retrieved January 30, 2020 from <https://dl.acm.org/doi/abs/10.1145/3319075>.
6. Aykut Coskun, Nazli Cila, Iohanna Nicenboim, et al. 2022. More-than-human Concepts, Methodologies, and Practices in HCI. Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems, Association for Computing Machinery, 1–5.
7. Nick Couldry and Ulises Ali Mejias. 2021. The decolonial turn in data and technology research: what is at stake and where is it heading? Information, Communication and Society: 1–17.
8. Daisy Yoo, Tilde Bekker, Peter Dalsgaard, Eva Eriksson, Simon Skov Fougst, Christopher Frauenberger, Batya Friedman, Elisa Giaccardi, Anne-Marie Hansen, Ann Light, Elisabet M. Nilsson, Ron Wakkary, and Mikael Wiberg. More-Than-Human Perspectives and Values in Human-Computer Interaction. Extended Abstracts of the 2023 CHI Conference on Human Factors in Computing Systems (CHI EA '23), ACM, New York, NY, USA, 5 pages.
9. Audrey Desjardins, Afroditi Psarra, and Bonnie A. Whiting. 2021. Voices and Voids: Subverting Voice Assistant Systems through Performative Experiments. In Creativity and Cognition. Association for Computing Machinery, New York, NY, USA, 1–10.
10. Catherine D'Ignazio and Lauren F. Klein. 2021. Data Feminism. MIT Press. Retrieved February 24, 2023 from <http://mitpress.mit.edu/9780262044004/data-feminism/>.
11. Christopher Frauenberger. 2019. Entanglement HCI The Next Wave? ACM Trans. Comput.-Hum. Interact. 27, 1: 1–27.
12. Kyle Gann. 2010. No Such Thing as Silence: John Cage's 4'33". Yale University Press.
13. Elisa Giaccardi. 2019. Histories and Futures of Research through Design: From Prototypes to Connected Things. International Journal of Design 13, 3.
14. Elisa Giaccardi, Nazli Cila, Chris Speed, and Melissa Caldwell. 2016. Thing Ethnography: Doing Design Research with Non-Humans. Proceedings of the 2016 ACM Conference on Designing Interactive Systems, ACM, 377–387.
15. Elisa Giaccardi and Johan Redström. 2020. Technology and more-than-human design. Design Issues 36, 4: 33–44.
16. Katherine Hayles and Arjen Mulder. 2009. How does it feel to be posthuman? V2_Lab for the Unstable Media. Retrieved February 23, 2023 from <https://v2.nl/archive/articles/how-does-it-feel-to-be-posthuman>.
17. Tim Ingold. 2017. On human correspondence. The journal of the Royal Anthropological Institute 23, 1: 9–27.
18. Goda Klumbyte and Claude Draude, eds. Prospects for a New Materialist Informatics. Matter: Journal of New Materialist Research.
19. Lenneke Kuijter and Elisa Giaccardi. 2018. Co-performance: Conceptualizing the Role of Artificial Agency in the Design of Everyday Life. Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, ACM, 125:1–125:13.
20. Szu-Yu (cyn) Liu, Jen Liu, Kristin Dew, Patrycja Zdziarska, Maya Livio, and Shaowen Bardzell. 2019. Exploring Noticing as Method in Design Research. Companion Publication of the 2019 on Designing Interactive Systems Conference 2019 Companion, Association for Computing Machinery, 377–380.
21. Iohanna Nicenboim, Elisa Giaccardi, Marie Louise Juul Søndergaard, et al. 2020. More-Than-Human Design and AI: In Conversation with Agents. Companion Publication of the 2020 ACM Designing Interactive Systems Conference, Association for Computing Machinery, 397–400.
22. Doenja Oogjes and Ron Wakkary. 2022. Weaving Stories: Toward Repertoires for Designing Things. Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems, Association for Computing Machinery, 1–21.
23. Daniëlle Ooms, Bahareh Barati, Miguel Bruns, and Teresa van Dongen. 2022. From concern to care: A transformative reflection on designing-with the living. Nordic Human-Computer Interaction Conference, ACM.
24. Jussi Parikka. 2015. A Geology of Media. University of Minnesota Press.
25. Larissa Pschetz and Michelle Bastian. 2018. Temporal Design: Rethinking time in design. Design Studies 56: 169–184.
26. Johan Redström. 2017. Making Design Theory. The MIT Press.
27. Anna Tsing. 2020. When the Things We Study Respond to Each Other: Tools for Unpacking the Material. In L.P. E. a. Eds A. Jaque, ed., More-than-human. Het Nieuwe Instituut, 16–26.
28. Elizabeth Tunstall. 2021. Decolonizing Design. MIT Press. Retrieved February 24, 2023 from <https://mitpress.mit.edu/9780262047692/decolonizing-design/>.
29. Ron Wakkary. 2020. Nomadic practices: A posthuman theory for knowing design. International journal of design 14, 3: 117–128.
30. Ron Wakkary. 2021. Things We Could Design: For More Than Human-Centered Worlds (Design Thinking, Design Theory). The MIT Press.
31. Minyoung Yoo, Lauren Knight, William Odom, and Arne Berger. 2022. Storywork & Reciprocity: On the Design of an Audio Documentary that Extends HCI Research back to Participants. Designing Interactive Systems Conference, Association for Computing Machinery, 1345–1357.
32. Ce Zhong, Ron Wakkary, William Odom, Amy Yo Sue Chen, Minyoung Yoo, and Doenja Oogjes. 2022. On the Design of deformTable: Attending to Temporality and Materiality for Supporting Everyday Interactions with a Shape-Changing Artifact. Designing Interactive Systems Conference, Association for Computing Machinery, 1555–1564.
33. Rolando Vázquez Zoë Dankert. 2018. Decolonial Listening, An Interview with Rolando Vázquez. Soapbox Journal 1.1, 1: 147–156.
34. 2016. Matters of Care. University of Minnesota Press. Retrieved February 24, 2023 from <https://www.upress.umn.edu/book-division/books/matters-of-care>.
35. 2019. Join the rebellion . Extinction Rebellion Netherlands. Retrieved November 1, 2022 from <https://extinctionrebellion.nl/en/>.
36. 2019. A Manifesto for Decolonising Design *. Journal of Futures Studies. Retrieved February 24, 2023 from <https://jfsdigital.org/articles-and-essays/vol-23-no-3-march-2019/a-manifesto-for-decolonising-design/>.
37. Anatomy of an AI System. Retrieved September 4, 2020 from <https://anatomyof.ai/>.
38. Designing Situated Conversations - Iohanna Nicenboim. Retrieved February 24, 2023 from <https://iohanna.com/Designing-Situated-Conversations>.
39. Caroline Sindors. Retrieved February 24, 2023