More-than-human AI

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"Para nosotras, las tecnologías no son artefactos u objetos. Las tecnologías son dispositivos relacionales. Nos tejen y las tejemos" (Cortés et al., 2020, p. 5).

("For us, technologies are not artifacts or objects. Technologies are relational devices. They weave us and we weave them")

Recently, a friend shared a photo of a note I wrote as a teenager, expressing my appreciation for our friendship. My first reaction was, "Well done, past me! I created a thoughtful piece of writing without the aid of ChatGPT." Like many people today, I frequently use ChatGPT for various tasks, including refining my birthday messages. While generative writing tools weren't available just two years ago, they now feel almost indispensable in our daily lives. As we embrace these advancements, reflecting on how rapidly our interactions with technology are evolving —and how they might shape our future–is intriguing.

Four years ago, in the pre-ChatGPT era, I wrote an article about the profound influence of AI recommendations on our lives, particularly in shaping our perceptions of right and wrong. The piece explored our trust in algorithms. While it might seem that simply fixing AI failures would enhance the technology, the article emphasized the importance of these failures. It argued that they can help us understand AI. In a time when almost every aspect of our lives is influenced by AI, these considerations are not just important; they are urgent to address.

While artificial intelligence (AI) has long been a research focus, the abundance of data and the emergence of generative platforms in recent years have made it integral to our everyday experiences, from very functional tasks to artistic practices. As generative AI becomes increasingly woven into the fabric of our lives, it brings a complex web of opportunities and challenges. This article unpacks some of these dynamics.

The article begins by situating AI within broader societal and ecological shifts. Drawing from critical AI perspectives, it frames AI as a socio-technical and planetary system shaped by humans and nonhumans. Building on this foundation, the article explores the potential role of design in engaging with this complexity while examining the limitations of human-centered approaches. Finally, it highlights the benefits of adopting a more-than-human design perspective as an alternative to studying and designing AI.

1. Situating the making of AI

"AI is born from salt lakes in Bolivia and mines in Congo, constructed from crowdworker-labeled datasets that seek to classify human actions, emotions, and identities. It is used to navigate drones over Yemen, direct immigration police in the United States, and modulate credit scores of human value and risk across the world. A wide-angle, multiscalar perspective on AI is needed to contend with these overlapping regimes" (Crawford, 2021, p. 218)

We are currently situated within a particular historical context marked by two simultaneous 'eras' as they are frequently discussed in media outlets: the age of AI and the Anthropocene. The age of AI is often described through the rapid advancements and pervasive integration of deep learning technologies across various facets of human existence, reshaping industries, economies, and social interactions. The term Anthropocene often refers to a geological epoch characterized by the profound and enduring impact of human activities on Earth's ecosystems, resulting in irreversible alterations to planetary systems and ecological balances.

Both terms, the Anthropocene and AI, are highly contested (Braidotti & Hlavajova, 2018). From the perspective of geology, the Anthropocene is critiqued because it appears that the effect of humans on the Earth's environmental and climate systems long predate the mid-20th century. Within the humanities, Donna Haraway (2016) critiques the Anthropocene narrative for its focus on humans, which obscures the diverse ways in which humans are entangled with other beings and ecological systems. Provocatively, she claims that a more accurate name for it is the 'Capitalocene,' which is a term coined by James Moore (2017), which better reflects "the managerial, technocratic, market-and-profit besotted, modernizing, and human-exeptionalist business-as-usual commitments of so much of the Anthropocene discourse" (p. 50). Haraway proposes a new framing with the term 'Chthulucene,' which advocates for a more situated understanding of human impacts on the planet,

one that acknowledges the complexities of power dynamics, inequalities, and multispecies relationships and embraces kinship with nonhumans rather than perpetuating exploitative modes of interaction.

The term AI is similarly contested. Crawford (2021) explains that "The term is both used and rejected in ways that keep its meaning in flux" (p. 9). When asking the question 'What is AI?', different people might give different answers. For some, AI is the technology behind smart devices, while for others, it might imply a commercial way of referring to Machine Learning models. The biggest challenge lies in the fact that the very notions of artificial and intelligence are not straightforward (Raley & Rhee, 2023). Each way of defining AI sets a frame for how it will be understood, measured, valued, and governed (Crawford, 2018).

Within the emerging field of critical AI studies, AI is understood as a socio-technical system and an extractive planetary network. From that perspective, AI is not just a tool but "an assemblage of technological arrangements and socio-technical practices, as concept, ideology, and dispositif" (Raley & Rhee, 2023, p. 188). In that regard, Crawford argues that "Artificial Intelligence is neither artificial nor intelligent" but rather "embodied and material, made from natural resources, fuel, human labor, infrastructures, logistics, histories, and classifications" (Crawford, 2021, p. 8).

The idea that AI is *made* is critical here and shows some of the challenges designers have today about generative AI. Firstly, if AI is made, we can examine *what makes AI.* Exposing the humans and nonhumans involved in and affected by AI is a challenge designers must respond to. Secondly, because if AI is made, it can be *remade*. The second challenge designers need to respond to is to develop the tools to design AI *otherwise.* Lastly, we can think that as humans and nonhumans make AI, it is also the case that *AI makes humans and nonhumans*. Thus, the last challenge for designers is understanding how AI shapes particular understandings of what it means to be human (Forlano, 2023).

2. Critical AI design approaches

The field of design emerges as a pivotal actor in the narratives of both AI and the Anthropocene: "design is intrinsically linked to the consequences of capitalism, colonialism, and the concentration of power in technological systems" (Crawford et al. 2023, p. 22). However, design also appears to be a field capable of contributing to the advancement of responsible AI. Throughout history, designers have been actively involved in the development of this technology. In the book 'Architectural Intelligence,' Molly Wright Steenson (2017) illustrates how architects and designers have long been central figures in the making of AI. Steenson demonstrates how four architects in the 1960s and 1970s, including Christopher Alexander, Richard Saul Wurman, Cedric Price, and Nicholas Negroponte, incorporated cybernetics and artificial intelligence into their work but also influenced digital design practices from the late 1980s to the present day, laying the foundation for interaction design. This trajectory appears to align with recent trends in design, where we observe designers using AI in their processes while also designing AI as a product. Moreover, it implies that beyond these two engagements, design has the potential to contribute fundamentally to AI research.

Designers have an enormous role in "revealing the systems underneath the sort of shiny, smooth surfaces of the technologies that we use every day. But also pushing back" (Crawford et al., 2023, p. 28). Engaging only with the interactions of humans and AI would be a missed opportunity, given that one key capacity of designers is their ability to deal with complexity and conflicting concerns (Redström, 2017). Thus, the question is how designers might engage with AI responsibly and meaningfully, i.e., going beyond just designing the interfaces and interactions. Emancipating the designer from this superficial role, we can think of design as a field that can contribute to developing new understandings of AI, which do not rely on solutionist or extractivist logic but move towards sustainable and inclusive futures –in the plural. However, to achieve that "design must participate more actively in questioning the social systems that nurture our current anthropocentric development system, generating conditions for projecting plural, post-capitalist, post-patriarchal and post-human communities" (Tironi et al., 2023, p. 6).

In the domains of HCI and design research, the exploration of AI is undergoing exponential growth. Over the past few years, scholars have been actively generating guidelines for designing human-AI interactions (Amershi et al., 2019; Van Der Maden et al., 2023; Vera Liao et al., 2020; Weisz et al., 2023), and examples of how AI could be used in design processes (Chiou et al., 2023; Feng et al., 2023; Lawton et al., 2023; V. Liu et al., 2023; Tholander & Jonsson, 2023). However, apart from a handful of examples (Benjamin et al., 2021; Brand et al., 2021; Desjardins et al., 2021; Hemment et al., 2019; Lindley et al., 2020; Murray-Rust et al., 2023; van der Burg et al., 2023; Van Der Maden et al., 2023), there are not many instances in which, through practice, design has shaped AI discourse more broadly. Equally, there are not many examples of posthumanist approaches to AI, apart from a few exceptions (Ghajargar & Bardzell, 2022; Klumbytė et al., 2022; Rajcic & McCormack, 2023; Reddy et al., 2021). Moreover, the intersection of RTD and a posthumanist approach to AI remains unexplored.

3. From human-centered AI to more-than-human AI

If design is to effectively address the planetary challenges associated with AI, it must first confront a significant obstacle: the potential for design itself to inadvertently worsen these challenges. For instance, the choice of metaphors in designing AI applications can either help explain AI or make it more obscure (Ganesh, 2022; Murray-Rust et al., 2022; Rotenberg & Roschelle, 2022). Thus, more than merely accounting for the role that designers can play, being critical of the design approaches chosen is crucial.

Human-centered AI (HCAI) is concerned with ensuring that the design of AI applications is aligned with human needs and societal values like trust, fairness, and human control (for a review, see Capel & Brereton, 2023; J. Yang et al., 2023). With a focus only on humans, human-centered AI seems to struggle to address the impact that technologies have on the earth and other species (Tironi et al., 2023; Wakkary, 2021). Additionally, it seems limited in addressing the growing agency of AI applications (Frauenberger, 2019; Giaccardi & Redström, 2020; Redström & Wiltse, 2018) and in extending issues of responsibility and trust beyond immediate end users and single interactions (Coulton & Lindley, 2019; Fuchsberger & Frauenberger, 2024). Furthermore, human-centered design may even pose risks for inclusivity. Forlano (2021) explains that "human-centered AI does little to address deeper issues such as the way in which 'the human' is defined around liberal Western Eurocentric notions of individuality, rationality, and autonomy that are typically, white, male, and ableist" (p. 1). These limitations become tangible in the interaction design of conversational agents. Trained to listen to a limited set of voices, they have trouble understanding the accents and speech patterns of people from many underrepresented groups (Koenecke et al., 2020). Furthermore, they often reproduce gender and racial biases because their designs are based on outdated stereotypes (Phan, 2019; Strengers & Kennedy, 2020).

While the challenge of understanding the harmful biases that are inadvertently embedded in the design of AI is widely discussed (Fossa & Sucameli, 2022; Hutiri & Ding, 2022), the anthropocentric tendencies in the design of AI are underexplored. However, moving beyond anthropocentrism in AI is not straightforward. Giaccardi & Redström (2020) explain that there is a sort of paradox when it comes to abandoning the human-centered perspective in technology. This is because, in response to the disruptive impact of algorithmic logic on society, we actually see reactions that call for placing the human even more firmly at the center.

However, given the scale and scope of AI systems, along with their societal and environmental implications, it becomes imperative for designers to transcend anthropocentric approaches and challenge Eurocentric notions of the human as a discrete, autonomous individual (Forlano, 2021). It is essential to question: "What if human-centered thinking (and its underlying humanism) is not the answer to these problems but rather, in its dominant role, may be part of the problem?" (Wakkary 2021, p. 1). In line with this critique, the article emphasizes the importance of recognizing the anthropocentric assumptions inherent in the design of AI-powered applications and explores avenues for emancipation from them (Braidotti, 2019).

The field of more-than-human design is gaining significant momentum. It is presented as a novel design approach to support designers in articulating a more expansive understanding of humans that goes beyond the humanist conception on which human-centered design is based. This is vital because when centering on humans, not everyone is recognized or valued equally, even within the human species. In the context of AI, more-than-human design can help designers account for the humans and nonhumans that *make* AI and understand how AI shapes humans. Furthermore, it can provide "a more expansive notion of what it means to be human—one that integrates other ways of knowing and being into discussions about AI, technology, and science" (Forlano, 2021, p. 1). Thus, the real potential of more-than-human design goes beyond complementing human-centered design methods, it can "allow us to dramatically reevaluate our 'needs' and, instead, find pathways toward asking the right questions of corporations, governments, and of ourselves as designers" (Forlano 2016, p. 50). Ultimately, more-than-human design can support designers in reflecting on their role in the world and consider new forms of coexistence and collaboration that are more plural and ecological, but ultimately also more humble (Wakkary, 2021).