Towards a HCI Community that Prioritises Environmental Sustainability: Reflections on a Collection of Fictions

ANONYMOUS AUTHOR(S)

This paper presents our exploration of the current and potential role of Human-Computer Interaction (HCI) research and practice in solving *and causing* current environmental crises. In this process, we generated and analysed twelve fictional narratives that speculate what it could mean if HCI prioritized environmental sustainability. This exercise helped us identify possible strategies towards this aim, such as finding mutual support, practicing prefiguration, building on existing meso-level initiatives in our community, being mindful of diverse perspectives, and nurturing positive emotions. The fictional space and the element of humour helped to express more fundamental critiques and concerns that hold a mirror up to the HCI community. Nevertheless, in reflecting on the exercise, we realized that the fictions were written from a limited, affluent perspective and that humour, although effective, must be used with care. We hope the paper contributes to raising and nuancing the topic of *(un)sustainability* in HCI.

CCS Concepts: • **Human-centered computing** → **Human computer interaction (HCI)**; • **Social and professional topics** → **Sustainability**.

Additional Key Words and Phrases: Fiction writing, Environmental sustainability, Research practices, Unsustainability

ACM Reference Format:

Anonymous Author(s). 2024. Towards a HCI Community that Prioritises Environmental Sustainability: Reflections on a Collection of Fictions. In *NordiCHI 2024: Nordic Conference on Human-Computer Interaction, October 13–16, 2024, Uppsala, Sweden.* ACM, New York, NY, USA, 21 pages. https://doi.org/XXXXXXX.XXXXXXX

1 INTRODUCTION

The Earth Overshoot Day [30] marks the day when humans' consumption of natural resources for the year exceeds the Earth's capacity to regenerate these resources. In 2023, August 2^{nd} marked this day, indicating that we would need 1.7 Earths to balance our current rate of consumption [30]. Overuse of resources leads to loss of biodiversity, irreversable damage to ecosystems, and climate change, currently manifesting as droughts, floods, wildfires, and storms [60, 61].

Although a useful metaphor, a single overshoot day is disingenuous as it masks that the causes and consequences of this overuse are extremely unequally distributed in human society. Studies estimate that the richest 10 percent are responsible for 48 per cent of carbon emissions [17, 36]. In fact, country-specific Overshoot Days vary widely: for example, Qatar and Luxembourg have their Overshoot Days as early as February, whereas Jamaica and Iraq have them in November [29]. While the affluent contribute most to the problems, the underprivileged suffer the most from their consequences. Unsurprisingly, the living standards of affluent consumption [23] are neither sustainable nor attainable for all, and are causing harm to the planet. Resource extraction, waste production and injustices continue to increase, as does the inequality between rich and poor [70]. *Radical action is urgently needed.*

In Human-Computer Interaction (HCI) research, sustainability has been a topic since the early 2000s [21]. Over the years, the focus has moved from the environmental impact of individuals' behavioural choices and lifestyle change to

Manuscript submitted to ACM

broader perspectives of inclusion, social justice and climate justice. However, this work largely sees sustainability as 'a research topic', and only rarely fundamentally questions HCI's own professional practice [21, 66]. As technology is generally regarded as bringing a solution, we may neglect its particular contribution to the problem. More fundamental criticism of HCI and its link to consumer capitalism and its impacts has been expressed only sporadically, although increasingly, in the last ten years [66]. For example, Håkansson and Sengers [35] argued that:

> *"to see sustainability in a holistic way, HCI also has a responsibility to think about our role in consumerism, and what role we could have. This is important because as researchers and designers of new digital technologies, we contribute to the continuous change of technologies".*

Similarly, Silberman et al. [67] identified *"a tension between the historical focus on technological novelty in HCI and sustainability goals"* which in Fallman's [26] words *"invite a consumptive way of being"*. As such, *"being a part of HCI is almost inexorably also about nurturing the strong link between consumerism and HCI work"* [26]. HCI, then, is also part of the problem. The relation between HCI and unsustainable consumption is pervasive, entrenched, complex, and has a long history. This paper, therefore, dives deeper into this relationship and asks if and how it might become a more central concern to the community.

Although dealing with a very serious topic, this paper began with a humorous provocation in the form of a fictive abstract that one of the authors was inspired to write during a workshop entitled [blinded for review] held in early 2023 [citation blinded for review]. The abstract was titled *"Unsustainable HCI: A review of the most destructive and harmful research areas in Human-Computer Interaction"*, and it argued that in light of pressing sustainability issues, it is about time that instead of *"blaming policy makers, oil companies, our ancestors, or consumers"* we look at ourselves and the ways that HCI research itself contributes to unsustainability. The paper was imagined to conclude with some suggestions of how research contributing to unsustainable developments might be 'sunsetted' and new directions found to 'gainfully re-employ' researchers engaged in it.

This paper is not exactly the materialisation of that abstract, but the abstract did bring together this paper's fourteen authors to reflect on HCI practices, how they contribute to the problems of unsustainability, and what might be done about this. After several detours, we ended up creating fictional abstracts and short stories as a vehicle to explore possible and preferable futures of a HCI community that prioritises environmental sustainability, and to reflect on our community's practices in the present. In this process, we turned the focus away from end-user practices and towards ourselves and the values, underlying assumptions, criteria of goodness, and practices prevalent in our community in relation to climate change, social and environmental justice. Through imagining what the field of HCI might look like if environmental sustainability became deeply embedded and guided all decisions and practices, our paper suggests possible pathways to realizing such futures within and beyond HCI.

2 EMBRACING FRICTION AND FICTION IN HCI

The idea of using fictional writing to engage with complex relations between HCI work and societal impact is not new. Pargman et al. [54] refer to fictional abstracts as a subset of design fiction, which in turn can be viewed as a form of frictional design. Frictional design resists final production and introduction to mass consumption, but rather is directed at critiquing design and technology [57]. Pierce [57] defines 'frictional design' and contrasts it to 'progressional design' directed at eventual production as in tension with progression. Critical design is often traced back to the work of Dunne and Raby [24]. Rather than provide solutions, critical design poses questions, often via speculation [25]. Within critical design, design fictions materialise possible futures through so called 'diegetic prototypes' [38], which form part of a

wider narrative exploring wider socio-technical alternatives. The introduction of design fiction is commonly attributed to Bleecker [8].

Over the past decade, HCI has built up a considerable corpus of work that uses fictional research abstracts to create space for critical reflection on the role of technology in society, and on HCI research practices. Kirman et al. [40] for example present a fictional retrospection written by 'robots from the future' examining *"how the systematic investigation of interactive technology facilitated and hastened the enslavement of mankind by robots during the 21st Century"*, and how the HCI community was largely responsible for this. The fictions use irony to criticise the technology push in HCI and the IT sector in general, while also noting the value of discussion within HCI. Blythe [9] presents fictional abstracts that reproduce the typical structure of a Research through Design paper summarising 'findings of papers that have not been written about prototypes that do not exist', arguing that this approach 'provides a space for research focused critique and development'. Linehan et al. [45] built on the idea of imaginary abstracts with a workshop focused on generating 'alternate endings' to contemporary HCI papers to envision and critically reflect on the long-term consequences of HCI projects. The idea of imaginary abstracts was pushed to its limits in Lindley et al. [44], which focuses on the question whether they can be usefully extended to fictional papers, concluding that *"when used tactfully and carefully fictional research papers may further empower HCI's burgeoning design discourse with compelling new methods"* as *"a means to move beyond solutionism to explore the potential societal value and consequences of new HCI concepts"*. In 2018, Pargman et al. collected and discussed fictional abstracts on the role of wisdom in computing for 2068 in a NordiCHI workshop [52], on which they reflect in a subsequent article [54]. Also focusing on specific topics within HCI, Blythe and Buie [11] used the technique to study techno-spiritual experiences, and Bates et al. [2] to reflect on the future of gig-economy workforces.

A specific set within this work has developed entire fictional conferences. In 2014, Baumer et al. [3] presented a curated collection of fictional abstracts that could occur in CHI 2039 to enable reflections on the various visions guiding HCI work and the ways in which it relates to wider social, political and cultural changes. In that same year, Penzenstadler et al. [55] explored possible futures of ICT4S through a compilation of fictional abstracts written for the conference in 2029. A few years later, Kirman et al. [39] took this idea a step further by publishing a call for papers for a fictional conference, the results of which they composed into a fictional conference programme that formed the basis for their paper. Similar to these works we used fictional narratives to reflect on the (un)sustainability of HCI.

Besides being acknowledged as an effective and unique tool for critical reflection on the role of HCI in society, Tanenbaum et al. [69] argue that narrative frameworks are important in communicating complex issues to wider audiences, particularly mentioning it as a fundamental component of the emerging LIMITS community, which focuses on relations between computing research and ecological limits. In a sense, we build on this idea by using fictions to communicate complex relations between HCI and unsustainability to the HCI community. To facilitate the use of (fictional) narratives in HCI, Blythe reflects on the kinds of plots used in HCI research papers [10], and as part of their NordiCHI workshop, Pargman et al. offer guidelines for fictional abstracts [52]. We have used these guidelines to reflect on the narrative structures and styles of our set of abstracts.

Like us, Pargman et al. [52, 54] struggle with frictions between non-normative negative technological critique and providing constructive normative guidance, concluding that eventually 'embracing the normative and non-normative as two poles of a process' seems to be the most preferable way forward. A narrative element in design fiction that recurs in several of the papers is the role of humour and specifically irony. Kirman et al. [39] argue that humour increases the accessibility of design fiction and contrasts it to mainstream work. Within this, irony is specifically used to highlight and critique solutionism (in reference to Morozov [50]), i.e., the limits of technological interventions in addressing

complex societal challenges. For Helms and Fernaeus [33], applying humour in design fiction is part of a strategy of *"provok[ing] discourse and reflection around sustainability"* – however, they note the risks of misinterpretation by other researchers, a fear *"already prevalent in a research discipline drawing upon the imaginative and tacit qualities of design"*.

What these works have in common is that they are mainly looking outward at what HCI might do to contribute to a more sustainable society. When looking inward, critique is directed at the Sustainable HCI sub-community. A rarer form of critique looks inwards at what HCI as a whole might best refrain from doing when aiming for a more sustainable society. As a notable exception, Jacques [37] addresses the friction between sustainability goals and HCI conferencing practices explicitly, in particular the then plans to host CHI2020 in Hawaii (which, due to the COVID19 pandemic, was postponed until 2024). While presenting a clear and critical message, the author also emphasises that the purpose of the paper is not to 'guilt-trip' or 'moralise' their colleagues and the message not to not travel, reflecting the struggle with fundamental critique on HCI practices.

In this paper, we build on this earlier work and use fictional writing to explore ways of formulating and presenting more fundamental critiques on the unsustainability of research practices within the HCI community as a whole. Section 3 describes our methodological journey of moving from that first fictional abstract to the current paper in which twelve fictional narratives formed the central vehicle for exploration. Section 4 presents the analysis of these twelve abstracts on both their content and form, and in Section 5 we reflect back on our initial aims and speculate on steps forward.

3 OUR METHODOLOGICAL JOURNEY

We initially started with a very specific goal: to look at the sustainability or rather possible unsustainability of the work most lauded at a major HCI conference. We were not aiming to be critical of this specific work per se, but rather, look at how authors could even assess and predict the environmental sustainability of their work. We hoped this reflection and the methods we would develop would be of wider value to the community. At this initial stage, we worked from a close focus on developing strategies for assessing environmental sustainability for a corpus of specific papers, toward a wider reflection on the (un)sustainability of HCI more generally. Below, we describe this process with the aim of explaining the development of our thinking, ultimately resulting in our fictions and reflections in this paper.

3.1 Assessing (Un)sustainability in HCI: CHI2023 Best Paper Analysis

Our initial plan focused on analysing full papers from CHI2023, approximately 900 in total, for their contributions to (un)sustainability. The idea was to identify implicit and indirect societal impacts (both positive and negative) that remain under the radar when focusing on sustainability 'as an application domain' for HCI (so called Sustainable HCI) alone. Acknowledging the great challenge of identifying such impacts without explicit cooperation from the many authors of these works, the idea was that our approach to assessing the papers would form a valuable methodological contribution in itself. At this stage, the project was envisioned to consist of three main steps: (1) develop an assessment framework, (2) apply the framework to the corpus, and (3) to reflect on this assessment and write the paper.

The plan was sent round to all 26 workshop participants, 17 of which indicated a wish to be involved. An online meeting was set, preceded by a preparatory assignment. In this assignment, members were asked to analyse two CHI2023 Best Papers each (totaling 34) using a preliminary assessment form composed on the basis of input provided by different members of the group. The reasoning behind assessing Best Papers was that they provided a sample of the total set of papers across the diversity of subcommittees that were, from a certain perspective, celebrated by the HCI community. The preliminary assessment framework included an evaluation of the paper's engagement with the

social and environmental dimensions of sustainability, and an analysis of the direct or indirect ways in which the work described in the paper had positive or negative effects on these.

Eventually, 30 of these Best Papers were analysed. Based on the analysis, 15 of the papers were found to explicitly engage with social sustainability, two with environmental sustainability, and the rest were deemed to engage with neither dimension. Although it became clear that such an assessment is extremely challenging due to its subjective and highly complex nature, the exercise still indicated that very few of the CHI2023 Best Papers had a noticeable focus on environmental sustainability. Furthermore, many of the works that dealt with social sustainability could arguably be seen as directed to the wealthiest 10% of the world's population, which raised the question whether the contribution of such work to social sustainability would be ultimately net positive or negative when considered from a more holistic global perspective.

Several participants expressed unease about judging other researchers' work based on sustainability criteria that CHI had not set as requirements for the work in the first place. Others argued that refraining from all judgement would defeat the original purpose of the project that was to illustrate the fundamental problem plaguing HCI as a field in not taking a firmer stand on this issue—the lack of consideration of how our research and its findings might be contributing to unsustainability.

3.2 Turning to Fictional Abstracts and Scenarios

We felt we needed another more forward looking direction to explore this further. The critical review exercise had enabled us to create an evolving assessment framework and sensitised us to possible dimensions of (un)sustainability, but we were still uncomfortable with the judgemental nature of the work, and the speed at which the project was progressing. We needed a way that avoided finger pointing while still being able to include critical judgments of our' collective works (authors included).

All authors are members of the HCI research community, and many would label their work as (S)HCI. We all have some interest in sustainability and collectively bring together decades of experience exploring sustainability and environmental justice issues from an HCI perspective. We settled on the idea of drawing on this experience to centre on positioning a future HCI to uncover our deeper concerns with sustainability and academic practice in HCI. This resulted in the idea of employing fictional writing as a means to offer perspectives on how environmental sustainability could be addressed in HCI in practice.

A fictive abstract assignment was sent to the group. The gist of the assignment was to *write a 600 word abstract, excerpt from a paper, or scenario taking place at CHI in which you experiment with 'what if ...' scenarios related to the objective of our project.* A total of 12 texts were submitted.

We then met online to discuss the writing assignment and determine the next steps. We recognized that the texts contained various imaginations of utopian and dystopian future changes on a political, organisational, interpersonal and individual level in HCI and beyond. After the meeting, we set out to analyse the texts for insights regarding our challenge of making environmental sustainability more central to mainstream HCI. The result is our analysis of what emerged, and our recommendations for how to take this thinking forward.

3.3 Approach to Analysis

We began our analysis by compiling an overview of the texts. For each, we determined the time (i.e., time points, time span of change) it referred to and then placed them together on a timeline. Inspired by related work in HCI that also

made use of fictional abstracts introduced above, we identified two main lenses through which we analysed the twelve texts. The first focused on the *content* of the fictions and the second on the *form* chosen by the fiction authors.

3.3.1 Content: Types of Fictions. Going deeper into the content of the fictions, we used the distinction between predictive, normative and explorative scenarios (see [15, 54]). Predictive fictions base the future on current and historical trends in an attempt to predict what will happen. Normative fictions set a certain target and focus on the question 'how can the target be reached' either by adjusting the current structures or systems or addressing perceived major flaws in the current situation with transformative changes. They present desirable (in the author's views) alternatives to the current status quo and expected futures. Explorative fictions are open and use fiction as a means to explore possible worlds, asking 'what if...' type questions.

With these types of fictions in mind, we analysed the texts with regard to how they depict the future, e.g., as desirable or not. If futures are depicted as desirable alternatives, what are their characteristics? If more exploratory, what is the content of the plots: what are the imagined causal chains? Where does change come from? What does change lead to? Who/what changes and why? Does the protagonist (or the reader) transform through the journey and how? What is learned (counter-arguments, unexpected positive and negative consequences, obstacles)?

To bring further structure to this analysis, we positioned the futures implied in the texts in the Manoa School Four Generic Futures [19] framework: Continuation, Collapse, Discipline, and Transformation. Continuation assumes a future of continued growth as dominantly assumed by Western societies. Collapse assumes a social or environmental collapse brought about by internal or external causes (or both); this can mean extinction but also a retrogression to a significantly lower stage of societal development. Discipline assumes a more disciplined society to emerge to prevent collapse caused by continued economic growth and includes a reorientation of values away from a pursuit of wealth and consumerism. Transformation focuses on the transforming power of technology and assumes a transition into a cyborg-like posthuman form of life on Earth and beyond.

3.3.2 Form: Narrative techniques and types of plots. Perhaps unsurprisingingly, the texts received made use of a diversity of narrative formats. These included abstracts and scenarios, but also personal diaries. We categorised the different narrative techniques used, such as irony, character development, world building, first, second or third-person perspective. We then reflected on the different types of plots, that is, the ways in which a chain of events tied together [16]. For this, we used four main plot types as defined by Booker [12]: Overcoming the Monster, Rags to Riches, Quest, and Voyage and Return.

Blythe [10] showed how most HCI scenarios adopt the 'Overcoming the Monster' plot type, in which the focal technology is crucial to overcome the "monster", such as climate change. In contrast, design fictions tend to take the 'Voyage and Return' approach where a topic is explored in an open manner and technology does not take centre stage. While this type does not have a clear purpose, it tends to result in the voyager taking a different perspective upon return. Real and fictional research abstracts tend to take the form of a Quest in which a specific question is central to the journey, generally resulting in a clear answer. Rags to Riches is a plot type in which the protagonist moves from an undesirable situation to a good life, which is uncommon in HCI. The plot styles overlap and plots tend to contain elements of more than one. We focused in our analysis on identifying the dominant plot style in the fictions. We then reflected on the types of insights rendered from the different plot styles and possible effects they might have on both author and reader.

Analysis was performed in several iterations where the first two authors went through the fictions from the two perspectives, discussed their (intermediate) findings in regular online meetings, and read through each other's notes

and insights. Once a first draft of the findings was written, these were shared with the wider group of fiction authors and project members, along with the overviews and notes underlying them.

4 RESULTS AND REFLECTIONS ON THE FICTIONS

In this section we present the results of our analysis of the twelve fictions. Acknowledging that there is overlap between the two, we make a distinction between the contents of the fictions and the form of the fictions. The set of twelve fictions is summarised in Table 1 and is available as supplementary material.

4.1 Contents of the Fictions

Here, we present the results of our analysis from the perspective of what kinds of futures the fictions represent, what are the main changes they depict happening, and what are the causes, drivers and obstacles of changes. In Figure 1, we illustrate the events unfolding in the fictions by placing them on a common timeline loosely organised by the types of futures the fictions could take place in.

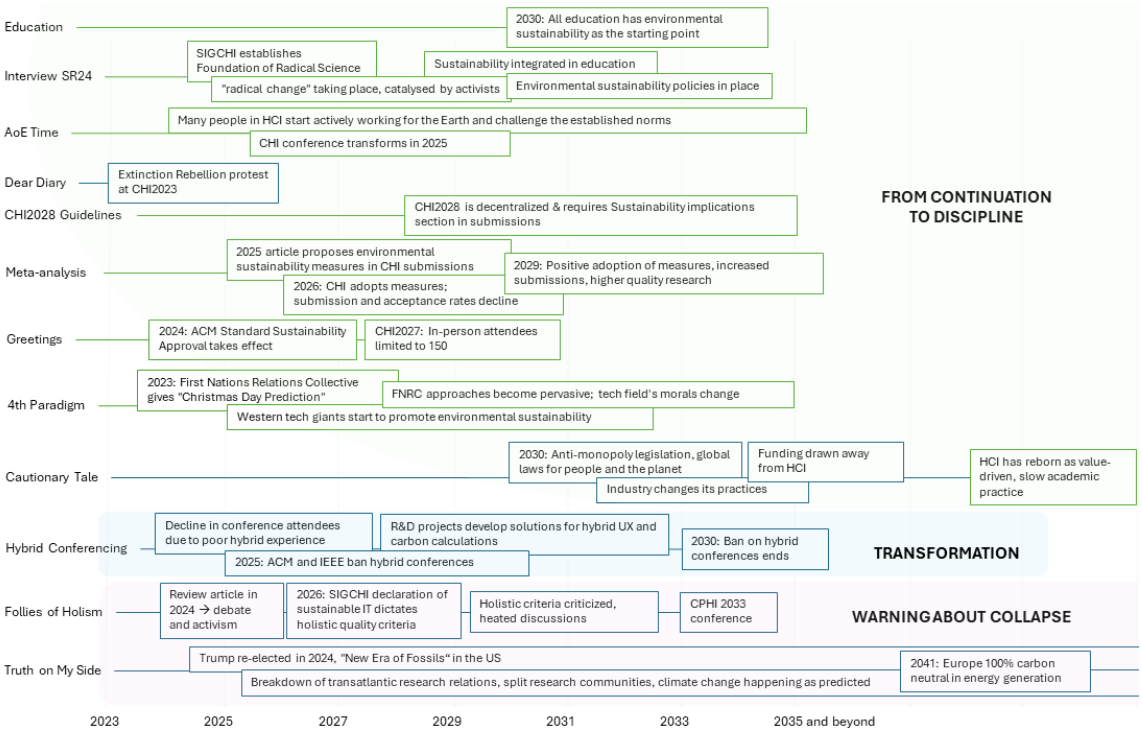

Fig. 1. Timeline of events in the twelve fictions. The fictions are loosely organised based on the types of futures they represent based on the Four Generic Futures framework [19].

4.1.1 Types of Futures. Most of the fictions are primarily explorative and focus on the question "what can happen in the future?". However, several also contain normative elements by pointing out or hinting at how the changes towards the desirable future had been achieved. A majority of the fictions portray a largely desirable future, but two (*Follies of*

Table 1. Summary of the fictions' timespans, narrative styles and contents.

Identifier	Title	Time	Summary
4^{th} Paradigm	The Paradoxical Causes of HCI's Fourth Paradigm	Years after 2024	Reflection piece on how the paradigm shift in HCI's ethical accountability was rooted in the First Nations Relations Collective approaches becoming more pervasive.
AoE Time	Anytime on Earth Time	After 2033	First-person reflection piece about a personal transformative moment as a HCI researcher.
Cautionary Tale	A cautionary tale of techno-utopias and HCI	Possibly 2040s	Reflection piece on how wide societal realisation of the 'toxic effects of technology' lead to a swift radical transition, and how HCI resisted the change but was ultimately reborn as value-driven practice.
CHI2028 Guidelines	Extract of the website of the ACM SIGCHI 2028 conference, physically and virtually distributed amongst 120 local events across the globe	2028	CHI2028 author guidelines that contain detailed instructions on how to prepare *Sustainability implications* section in the research paper submissions.
Dear Diary	Dear diary	2023	Diary of events at CHI2023 where an Extinction Rebellion protest targets the CHI community because it is driving overconsumption.
Education	Environmental sustainability as a starting point of all education	2030	Scenario describing how environmental sustainability is the foundation of all teaching activities globally, including HCI.
Follies of Holism	Follies of Holism: The Bitter Fruits of the Paradigm Shift towards Sustainable HCI	2033	Abstract of a literature review of CHI 2025–2032 papers and an introspection of HCI community discussions, addressing the strict publishing norms dictating the use of holistic quality criteria.
Greetings	Greetings from the desk	2027 and later	First-person narration of three conversations highlighting environmental sustainability measures such as conference submissions requirements, personal carbon budgets and limits to in-person conferencing.
Hybrid Conferencing	Hybrid conferencing is back in town	2030	Reflection piece describing how hybrid conferencing was banned in 2025 and then reintroduced as socially and environmentally sustainable in 2030.
Interview SR24	Research interview transcription: Participant SR24, part 1	Probably 2030s	Transcript of an interview in which a HCI researcher interviews another, focused on how the radical change took place in the 2020s.
Meta-analysis	How sustainable are we, how well can we say, how well could we? Meta-analysis of environmental sustainability reporting in CHI research papers from 2025 to 2028	2030	Abstract of a meta-analysis of CHI 2025–2028 papers, in terms of environmental sustainability measures required to be reported in papers.
Truth on My Side	Even If the Truth Was on My Side	After 2041	Reflection piece on how the world and research community became divided and polarized after a 'New Era of Fossils' began in the US after 2024.

Holism, *Truth on My Side*) explore an undesirable future from the HCI community perspective, warning against dividing the community by taking environmental sustainability requirements too far without listening to conflicting views. From the perspective of HCI, *Cautionary Tale* also depicts a partially undesirable future where HCI is slowest to change and has to suffer a certain kind of collapse before progressing to a desirable state. Whereas almost all fictions explore futures that are set some years in the future, ranging from 2027 to 2041 and beyond, *Dear Diary* is an exception in that it presents an alternative past at CHI2023.

We applied the Manoa School Four Generic Futures [19] framework to position the fictions in the four different futures considering the scope of the fiction. For example, *AoE Time* is a narrative of personal transformation to actively working alongside many others for environmental sustainability, but at the same time it implies a larger-scale change towards a future that can be categorised as Discipline. Most of the fictions present a Discipline-type of future as well, with the scope varying from conferencing practices that aim to minimise carbon footprint and require submitted research to fulfil environmental sustainability criteria (e.g. *Greetings*, *CHI2028 Guidelines*, *Meta-analysis*) to sustainability being integrated in all education (*Education*) or regulations such as electricity usage quotas (*Interview SR24*). Fundamental changes in community values are also explicitly mentioned in Discipline futures in the fictions 4^{th} *Paradigm* and *Cautionary Tale*. How such Discipline futures have been achieved across fictions is explained in more detail in the next section.

Continuation and Collapse are also present in some of the fictions. The *Dear Diary* narrative of an alternative past is Continuation from the narrator's perspective, as they do not see any reasons to change from business as usual. *Truth on My Side* portrays a future where the US and European research communities have been divided, with the US on a Continuation path with the 'New Era of Fossils' and the Discipline-oriented Europe striving towards carbon neutrality. The implication of the fiction is that the world as a whole is likely to be heading towards Collapse, as climate change is happening exactly as predicted. *Follies of Holism* warns about a Collapse on a more narrow scale of the HCI community. A more positive outlook is given in *Cautionary Tale*, which narrates the HCI field's timeline from Continuation to Collapse and eventual humble rebirth to Discipline.

Interestingly, the only fiction that clearly represents Transformation is *Hybrid Conferencing*, in which technology development ultimately is the solution to the environmental and social challenges of hybrid conferencing. Although the fiction implies that environmental and social sustainability are important factors driving the technology development and in individuals making decisions about their on-site or remote participation, the conferencing and research practices themselves do not appear to change.

4.1.2 Changes Within and Beyond HCI. The fictions depict a variety of changes taking place (or being obstructed) on individual, community, institutional and governmental levels. On the level of an individual person, two fictions convey an individual process of change illustrated by a moment of realising one's own hypocrisy (*AoE time*) or criticism towards one's past attitudes and behaviours (*Interview SR24*). These narratives bring into focus an individual HCI researcher's struggle about the field's inherent push for more technology justified by *"the pretence of being socially beneficial"* (*AoE time*), and how this can conflict with personal values. In contrast, a personal resistance to change is depicted in some fictions, most vividly by the narrator of *Dear diary* who is both unaware of the environmental impact of their research and unwilling to change their own ways, subscribing into techno-optimism through a belief that technology will solve climate change and the biodiversity crisis.

Personal obstacles are also present in *Interview SR24* and *AoE Time*, which both describe how it can feel difficult to challenge the current system. Especially, practices and social and academic norms—for career reasons or simply

because they are the prevailing norms and it takes courage to break them. All three fictions imply or directly depict activism as a significant bottom-up driver for change, but take a different stance towards this: the narrator of *Dear Diary* is confused and annoyed about the Extinction Rebellion protest at CHI2023 and perceives students who join the protesters as being naive; the interviewee in *Interview SR24 "wasn't one of the activists who had the endurance to push for lasting changes"* but sees themselves as benefiting from the activists' work now. The narrator of *AoE Time* is likely one of the early-stage activists who *"started actively working, as so many of us did through that decade, for the Earth and all its life"*. However, *Greetings* presents us with a long-time activist who in 2027 smiles at the notion of gluing themselves to a wall as a protest as being *"like in the old times"*. Activism is thus present on both individual and community levels in the fictions, as an individual joins into (or resists) a collective action with a community to influence institutional practices or regulations.

An institutional practice that is the main subject of change in several fictions is the CHI review process and the conference itself, which also happen to be one of the criticised practices in all four aforementioned fictions (*AoE Time*, *Interview SR24*, *Greetings*, *Dear Diary*). *Greetings* explores how the environmental harm of conferencing has been reduced: the paper submissions are required to pass the ACM Standard Sustainability Approval (ASSA) that has taken effect in 2024 and the in-person conference attendance is limited to 150 persons. While ASSA has resulted in an increased number of desk rejects, it has also put pressure on universities to implement sustainability measures. Through the narrator's experience of the in-person conference (ironically situated in Hawai'i), the fiction also suggests that online conferencing experience has improved so that it vastly surpasses the in-person experience in terms of social interaction and knowledge exchange between the presenter and the audience. What remains is a generational conflict between the powerful figureheads of HCI, who still long for the old way, and the young academics, who have already adapted, but still need to carefully work around the nostalgic whims to secure a career. Generational conflicts—or differences—are also more broadly present in several fictions from the perspective of education. *Dear Diary* portrays students, the younger generation, joining in the Extinction Rebellion protest, while the narrator thinks *"Students can be so naïve"*. The interviewee in *Interview SR24* points out *"integrating sustainability in education has been one of the changemakers"*, with the implication that activism contributed to this change, and *Education* describes a future where environmental sustainability is embedded in all educational activities.

Another example of how the CHI conference could prioritise environmental sustainability is *CHI2028 Guidelines*, the excerpt from the CHI 2028 website that offers normative guidelines for authors on how to prepare the 'Sustainability Implications' section in their paper submissions. The change in the HCI culture is evident (although its origins are not explicated): the conference is decentralised, it prioritises quality of submissions over an arbitrary acceptance rate, and collaboration is valued over competitiveness. This reflects an underlying shift to a value-driven research culture (cf. *Cautionary Tale* and 4^{th} *Paradigm*). A somewhat contrasting view is presented in *Hybrid Conferencing* in which the primary driver for banning hybrid conferences seems to be financial unsustainability—a decline in conference attendance because of poor participation experience—although social sustainability plays a role too in terms of fragmentation of research communities.

The fictions *Follies of Holism* and *Meta-analysis* explore the impact that stricter environmental sustainability requirements on conference paper submissions could have on the community and how research is conducted. Interestingly, both fictions point to an article by [the first author of the present paper] et al. as a catalyst for change (published in 2024 and 2025, respectively, the former being a review and the latter a meta-analysis). In *Follies of Holism*, the article raised heated debate and citizen activism that eventually led to the SIGCHI declaration of sustainable IT in 2026, whereas the article cited in *Meta-analysis* proposed a requirement for environmental sustainability measures

in paper submissions that was swiftly adopted in 2026. In *Meta-analysis*, some people oppose the requirements and an initial drop in submission and acceptance rates is observed, but by 2028 the adoption of measures has become widespread, indicating that HCI research is becoming more sustainable. This implies that the requirements have been reasonable, in contrast to *Follies of Holism*, where overly strict holistic quality criteria are deemed as unattainable and detrimental to community. As such, the fiction explores the boundaries of what the goal of our initiative is, i.e. how far the sustainability considerations can and should be taken as requirements in HCI research.

The relationship of HCI research and industry as a driver or obstacle for changes is explored in 4^{th} *Paradigm*, *Cautionary Tale* and *Truth on My Side*. In 4^{th} *Paradigm*, a collective called First Nations Relations Collective (FNRC) starts developing models that predict climate events with unprecedented accuracy, drawing from *"ancient data"* that is embedded in indigenous people's cultures, and the shift towards promoting environmental sustainability is catalysed by Western tech giants. These tech giants at first adopt FNRC approaches only due to financial interests, but eventually become affected by the relational logics in FNRC models and truly change their moral code as well. In *Cautionary Tale*, HCI is reborn as value-driven, modest and slow academic practice, but only after it loses industry funding and is no longer able to persist with *"business as usual"*. The industry is quicker to change, as it has to *"innovate or die"* because of the global outrage and new legislation and regulations protecting people and the planet. Funding is drawn away from HCI as industry does not want to be associated with the ignorant academics who continue denying the harmful impacts of their technology. HCI is finally forced to reflect on its practices and go back to the *"real HCI"*, i.e., addressing real problems that matter. A more pessimistic outlook is in *Truth on My Side* where the research community has become divided between Europe and the US primarily due to the re-election of Trump in 2024 and increased funding into the fossil fuel industry in the US. Research collaboration suffers since the research foci become very different between the continents, and many European researchers are lured to the US by lucrative funding opportunities provided by the fossil fuel giants. The fiction implies that the rift and polarisation of the research community could perhaps have been prevented by listening more to research colleagues' needs and wants. All in all, these fictions stress that the possibilities to change within HCI are significantly impacted by whether the actors funding the research have environmental sustainability as a priority.

4.2 Narrative Techniques and Types of Plots

The original brief asked for a 600 word fictional paper abstract, paper excerpt, or scenario. Three (*Follies of Holism*, *Meta-analysis 4th Paradigm*) of the twelve submissions used a paper abstract/excerpt form. Other submissions included scenario sketches, essays, diary entries, an interview transcript, and a webpage. The length of the texts varied from just under 300 to 2000 words.

4.2.1 Letting out Emotions. The use of fiction and the particular narrative techniques, such as a first-person perspective, combined with positioning in an alternative reality, humour and irony, created a setting that enabled forms of critique and insight not possible in a 'regular' paper. Deliberate strangeness mixed with familiar elements is central to design fiction. This 'slight strangeness' [24] of everyday HCI research practice provides the reader with 'a relatable sense of everydayness', which according to Garduño García and Gaziulusoy [27] can elicit an emotional response, including laughter. But as elaborated below, these elements did more than just that.

Six (*AoE Time*, *Cautionary Tale*, *Dear Diary*, *Greetings*, *Interview SR24*, *Truth on My Side*) of the twelve texts were written from a first-person perspective, in all cases being that of an established, Western HCI researcher. In a first-person perspective, the author gains the freedom to describe the inner thoughts and emotions of the lead character. Emotions,

rather than rational arguments, are thereby drawn into the debate in a way that is not possible with scientific papers (as *AoE Time* more or less explicitly argues). *Greetings*, for example, paints a reality in which long distance travel is 'crazy', and in-person presentations are awkward—at least for the younger generation of academics.

Involving inner thoughts is another way of engaging in counterarguments that tend to be excluded from formal academic debate. *Dear Diary* for example was written from the perspective of an HCI researcher with little interest in sustainability, and embodied stereotypical techno-optimist views.

As can be expected from fictions, all narratives introduce one or more elements that do not exist outside the fiction, remain unexplained and thereby trigger the imagination: an ACM Standard Sustainability Approval (ASSA), an In-Person [conference attendance] Lottery (IPL), a First Nations Relations Collective, an Extinction Rebellion protest at CHI2023, compulsory 20% biodiversity protection tasks. These elements are not always explained to the reader and thereby trigger imagination. Pargman et al.'s guidelines refer to these missing explanations as 'intentional omissions' [53]. For example, *Follies of Holism* is a submission to CPHI (presumably Computer Post-Human Interactions), which takes place on February 29–31, 2033, as an apparently fully online event 'Anywhere/Everywhere/All at Once' (referencing a popular movie), contains a puzzling affiliation, and a non-citable, quasi-human co-author. The final sentence being unfinished (*"Some argue that the SDG's ..."*) adds to this triggering effect. Yet, the text is recognizable as an HCI conference paper. Similarly, *AoE Time* uses 02023 as the regular time notation without explaining why, triggering reflections on perceptions of time scale.

In addition to strangeness and intentional omissions, many of the fictions contain (LoL) humour and (deep) irony (e.g. *Cautionary Tale*, *Dear Diary*, *Follies of Holism*, *Greetings*, *Interview SR24*). For example, the fictional CHI2024 Best Paper *"about extended reality devices that can enable people to detect the difference between high-resolution and super-high-resolution displays that they wouldn't notice with a plain eye"* referred to *Interview SR24* is deeply ironic, particularly because it was inspired by our analysis of CHI2023 Best Paper awards.

This creation of a different reality and taking a first person perspective allows for fairly explicit naming and shaming, but from the safety of a fictional setting. *Cautionary Tale* for example lets the imagined author ponder from this imagined future: "*how [] could academics so complacently have ignored the impacts of digital technology on society and the planet it was co-developing?*". Narratives of *AoE Time* and *Interview SR24* display something similar by letting their main characters refer to their previous self (i.e., a current mainstream HCI researcher) as "*an ignorant, selfish ass*" and as someone "*captured by a system that worked against the interests of not just (almost) everyone in it, but, multiplied up, against the interests of our whole planet*".

4.2.2 Quest and Voyages. Although the fictions take different forms, they all contain at least an element of the Quest plot style by exploring a specific 'What if …' question. The brief specifies this question as 'What if environmental sustainability would be central to HCI'. Quest narratives centralise and explore the question, not just in terms of structures and elements, but also in terms of norms and emotions. The use of these different plot types generates different kinds of insights on how the transition towards a central focus on environmental sustainability in HCI might be made, and what consequences, both desirable and less desirable, might be.

Within this set, *Follies of Holism* and *Truth on My Side* (and *Meta-analysis* to some extent) are Quest-style fictions that contain warnings against pushing for our aim of centralising environmental sustainability in HCI. *Follies of Holism* highlights how such a push could lead to a counter-movement that in time could reverse any gains made. *Truth on My Side* warns against risks of letting the gap between 'progressive' and 'conservative' camps become too large. This might alienate more conservative colleagues, lead to a split and result in a strengthening of environmentally harmful research

practices. The *Meta-analysis* fictional abstract 'predicts' a strong drop in accepted papers if strict sustainability criteria would be introduced for CHI, which is then imagined to pick-up again in the years following, eventually making it an optimistic view.

Because the question pertains to a future world, most texts also contain elements of a 'Voyage and Return' plot style. In a Voyage and Return plot, a topic is explored in an open manner, exploring an unfamiliar world. This different world forms a mirror to the present. Various insights are gained on this Voyage, including potential advantages, downsides and risks of moving towards a central focus on environmental sustainability in HCI. Several of the narratives in this plot type use a diary style to remain close to the detailed everyday world of the reader. This reader, assumed to be an HCI researcher, is aimed to return from the journey with new insights; a changed mind. The alternative world in *Greetings*, for example, is a place in which desirable changes have taken place, luring the reader to consider how such an alternative reality might work and make sense. The alternative reality in *Dear Diary* does something opposite, pointing out the irony of sticking to the status quo by confronting it with counterarguments. *CHI2028 Guidelines* similarly takes the reader along to a detailed part of the future world in the form of a fictional webpage with an explanation of the then compulsory 'sustainability implications' section for papers. The fictions thus help the authors to explore possible counterarguments existing in the community against the change and potentially how to deal with them. To the mainstream HCI reader, they provide arguments for change, or against maintaining the status quo.

4.2.3 Overcoming the Monster. Viewing the narratives from the perspective of an 'Overcoming the Monster' plot, highlights how change towards centralising environmental sustainability could come about. Most of the stories in some way hint at how change came about, but 4^{th} *Paradigm*, *Cautionary Tale*, *Education* and *Hybrid Conferencing* make this question more central. While *Hybrid Conferencing* takes a typical HCI style approach of a monster (unsustainable conferencing) being overcome by a technological innovation (seamless hybrid conferencing), the authors of 4^{th} *Paradigm*, *Cautionary Tale* and *Education* developed variations on this type. In *Education*, a lack of attention for environmental sustainability in HCI is overcome by a centralization of environmental sustainability in all education, from early childhood to university. In 4^{th} *Paradigm*, the unsustainable HCI (i.e., the Monster) is overcome with technology, but in an unexpected, paradoxical manner. The imagined First Nations Relations Collective, which involves HCI and AI researchers as well as Kānaka Maoli, combines ancient indigenous knowledge with modern computer science, leading to new business insights. The wider adoption of these models in turn evoked a proliferation of underlying ethics and values. Through clever 'infiltration' with accurate prediction models, indigenous values are brought into the heart of the business world, resulting in a transformation from within.

Cautionary Tale also follows an 'Overcoming the Monster' plot, but it is not technology that overcomes the monster. Rather the contrary. Technology, or the tech industry of which HCI is part, *is* the monster. And in the story this monster is not necessarily overcome, it rather destroys itself by destroying the planet and people it feeds on. When this tipping point was reached, *"justice came swift"*, caused by a *"global outrage"*. The change in academia is then imaged, ironically, to be forced by demands from industry. The piece is thus holding a mirror to the HCI community, asking to what extent it is ahead of industry, or dependent on it.

5 DISCUSSION

This project emerged from a certain frustration we felt with work in our community, as HCI researchers working to address issues of unsustainability. We saw work that was arguably making unsustainability worse (a feeling well captured in the Dutch expression of 'mopping with the tap running'), as well as a sidelining of climate change

and sustainability as a focus within and beyond HCI. Our initial aims focused on better understanding the roles of our community and its parts regarding sustainability and unsustainability in the context of HCI. However, we ran into various challenges regarding this pursuit. One, it turned out to be practically difficult to determine whether a research activity or outcome contributed to (un)sustainability, and to what extent. Secondly, even if this impact could be determined, questions were raised whether researchers could be judged on criteria that weren't part of their objectives, and who should judge them? Prioritising environmental sustainability wouldn't necessarily sideline other societal aims pursued within HCI, such as health, equity, employment, productivity, and technical innovation, but it runs a risk of doing so if not considered carefully. Who is to say which of these aims should be most important? Finally, we concluded that pointing fingers to 'unsustainable' research would not be constructive in raising levels of attention for environmental sustainability in the community.

These challenges led us to executing a fiction writing exercise. Through writing and analysing the fictions, we set out to imagine what it could be like if the HCI community would meaningfully prioritise environmental sustainability within its research and wider practices. In the original assignment, we stated that this approach could help to identify feasible, actionable directions for change to accompany our critique. Moreover, we anticipated that writing these speculations would likely involve humour, which could be effective in broaching uncomfortable messages and thereby address a main struggle we had experienced in our pursuit of being critical of unsustainability without being confrontational or needlessly judgemental on specific individuals, where broader systemic issues need to be addressed.

In this section we reflect on this exercise in light of our initial aims. We discuss four themes that emerged from our joint reflections: (1) the scale of change and our sphere of influence; (2) is what we are proposing already happening in HCI; (3) who are we to talk and missing perspectives; and (4) the role of humour.

5.1 Scale of change and sphere of influence

In the fictions and our reflections upon them we identified a recurring tension between our sphere of influence, and the scale of change required for preventing anticipated planetary and societal collapse.

Various fictions imagined systemic change to happen through individual, intrinsically motivated change. Our sphere of influence extends at least to our own actions. Or does it? Translating this idea to our daily academic reality reveals that even at this scale we run into challenges beyond the individual and even beyond specific communities, such as existing conference practices, research funding and promotion criteria creating bias towards a certain type of research (emphasizing technological innovation) and academic practice (that can often require international travel to 'prestigious venues'). Moreover, we know from earlier critical research that incremental change can be counterproductive by confirming an unsustainable status quo [58], or have rebound effects that can backfire [13, 31]. When thinking about more radical, systemic changes, the fictions tend to imagine these to emerge external to the (S)HCI practice (e.g., bans on flying, electricity rationing)—suggesting some sense of futility with best effort and bottom up calls for action, and a lack of global leadership. We might perhaps argue that rather than futility, no change is possible without concerted action and passionate individuals calling for it.

Interventions at the meso-level of HCI governing structures (in which many of us are in some way already involved) provides a middle ground, but has its own limitations and challenges. Besides many initiatives already being developed (see Section 5.2), this level of intervention poses major challenges regarding questions of who gets to decide what for whom (also elaborated below). However, it is important to nuance this aspect of normativity. Steering towards a greater emphasis on environmental sustainability in HCI means taking a normative stance, but resisting or ignoring this move is also normative. As has been pointed out by Dourish [22], HCI is inherently political, whether working within the

status quo or trying to change it. Moreover, judgment is arguably already part of the HCI community through existing reviewing processes. Possibly this sweet spot of scale-meets-influence, combined with already existing practices of judgment, is a reason for a change in review processes and criteria being a recurring theme in the fictions.

Then turning back to the personal sphere of influence, we found inspiration in research on prefiguration [32, 49]. Prefiguration is the effect of making a desired future happen by living it in the present. Our fictions inspired us of the possibility to live and work as if our fictions have already come to pass. As one of us reflected: *"We can be activists in our own lives through acting in the ways we want to come to pass more widely, and sharing ourselves as models for how it is possible for academics to be (not in a pious way, but quite practically)"*. Being activist implies questioning and challenging the status quo. This is not easy, both emotionally and practically. However, generations of HCI researchers and practitioners will be educated by some of us and might draw inspiration from this, and that reach is often underexercised—including the discourse and ability to evaluate (un)sustainability in our work [56, 59]. Critical mass and not being alone can be very helpful in this process. The [anonymized] workshop, this joint writing project and collective imaginary exercise may have contributed to developing a novel shared set of norms and practices that can form an inspiration within and beyond the group to practice HCI (radically) differently. Finding allies in a controversial stance can strengthen one's efforts to pursue this stance despite resistance.

5.2 Is what we are proposing already happening?

Reflecting on our exercise while actively participating in HCI raised further questions around the novelty of our proposals. How is what we did and produced really different from what is already happening? How is our pursuit linked to ongoing developments and how might it contribute?

The 2024 call for papers for the Designing Interactive Systems conference stated that design might by turns "be the cause, or complicit, in advancing [problems of geopolitical instability, anthropogenic climate change, and crises in shrinking biodiversity]" and contained a Special Note on Broader Impact:

> *"At DIS 2024, all submissions will be assessed based on their broader impact to society and/or the environment. We encourage authors to address the positive and negative, actual and potential, and/or pragmatic significance of their work; that is, they should engage with substantive and reflective discussions of the impact of their research beyond a narrow intellectual contribution to the field."* [1]

The SIGCHI Futures Summit held in February 2024 welcomed "Radical reimagineers" to think about challenges confronting HCI communities "particularly in terms of sustainability (of the climate, funds, and our own processes)" and how SIGCHI might address them in the coming 5–10 years [42]. However, climate sustainability did not—visibly—feature in the main event outcomes [43].

While papers, like this one, only tend to reach an audience already interested in the topic, the initiatives highlighted above are addressing the wider HCI community. Might this imply that we are in fact on schedule for implementing our imagined set of sustainability implications criteria for CHI2025 or CHI2026? Are HCI conference organizers also already increasingly focusing attention on sustainability, as indicated by the active discussion about the CHI2024 conference in Hawaii, with part of the HCI community objecting to attend this conference for reasons of sustainability and justice [34, 41]?

Analysing the results of the DIS2024 Call for Papers and the SIGCHI Future Summit lie beyond the possibilities and scope of this paper. However, our personal experiences with the DIS2024 reviewing process suggest that the Special Note did not fundamentally change it, and the public descriptions of the Summit results suggest that the focus on

"climate sustainability" somehow got lost in the process. We remain optimistic, that these kinds of changes will bear fruit over time. What is interesting though is that initiatives and opportunities like this exist, as with multi-site events, local hubs and fully online and hybrid conferences. While they have so far not resulted in the kinds of radical changes imagined in our fictions, they do form seeds and leverage points that we might latch on to to instigate this. It can be argued that our fictions exercise and discussions even helped us to identify them as important opportunities.

Naming and shaming is also something that is already happening in HCI and related disciplines. For example, the Unethical Designs website [20] is singling out examples in the realm of ethics. And Sharma et al. [66], drawing on Selwyn [65] single out non-fungible tokens, cryptocurrency, large language models, immersive virtual environments, and on-demand streaming platforms as technologies that are "destructive no matter who owns them". While featuring in a greatly inspiring paper, this example immediately highlights a difficulty of this strategy. While it indeed begs for critical reflection whether this might sort the desired effect, immersive virtual environments feature in one of our fictions as the pivot of less environmentally impactful conferencing practices; raising more critical questions about the dual (positive and negative) roles of many technologies, and the relativistic and systematic nuance of understanding when a technology is being beneficial or detrimental.

5.3 Who are we to talk?

Although we have established that judging others' works on subjective criteria is a challenging but already common practice within HCI and could therefore be justified as a strategy towards instigating a greater role for environmental sustainability within the community, we have so far not reflected on the who is doing the judging, and why this can be problematic.

Taking a step back, we observe that our group of authors are predominantly Western, Caucasian, established HCI researchers, one is based in Africa, one in Australia and the remainder in Europe. All fictions, except for 4^{th} *paradigm*, implicitly are based on the intuition, knowledge, and values of people in Western, Educated, Industrialized, Rich, and Democratic (WEIRD) countries [46]. This raises questions around who it is that gets to comment and shape the future of HCI, their position in relation to affluence and technology knowledge practices. Both the stories and the analysis take place in our quite small bubble of position. The analysis did not notice ethnic or geographic inclusivity as part of the content of any story and grouped 4^{th} *paradigm*, in which it was a focus, into the same set of themes as the other stories. Indeed, it is hard to escape the lens of one's own privilege, and the perceived entitlement and universalising position of HCI [46] this brings to write and reflect in this way.

As acknowledged in the introduction to this paper, while environmental sustainability can be argued to be a problem mainly caused by the affluent, the less affluent suffer most from its consequences. Shouldn't those affected most by our core problem at least be involved in how, which problems are addressed? How did this feature remain absent from the imaginaries of a group of researchers raised within traditions of user-centred and participatory design? In addition to a necessary engagement for understanding the problem at hand, economically lean countries also form important sources of inspiration for finding promising alternatives for destructive Western ways of living. As the 4^{th} *paradigm* fiction highlights, less-affluent societies and indigenous cultures can form valuable examples of how environmental sustainability might be achieved for societies struggling with the fundamental unsustainability of how they are organised. From our starting point we hope this can be seen as an invitation to bring other, more diversely rooted perspectives forward.

Work with indigenous and Global Souths communities around sustainability in HCI has been ongoing for over fifteen years, e.g. [5–7], and new books in sustainable HCI are starting to integrate lessons from souther knowledges in their

analyses e.g. [68]. To amplify voices that are too often excluded, the SIGCHI Sustainability committee is supporting a panel at CHI24, "Sustainabilities and HCIs from the Souths" and undertaking research to understand what sustainability means in Africa and Latin America [4]. Meanwhile, African researchers at the Microsoft Research labs in Nairobi are making sustainability a focus, organisations like Climate in Colour [47] provide in-depth courses and practical tips on environmental racism, which occurs in WEIRD societies as much as between the global norths and souths, and initiatives like the Asian CHI symposium provide a platform to bring the colonial history of climate and its relation to sovereignty in conversation with technology design [28, 63].

Finally, as authors of this paper and members of the HCI community, we have to realise and acknowledge that we are living and working in a bubble, and that some of the ways forward we propose might be exclusionary exactly for those we are claiming to 'help'. For example, criteria for environmental sustainability could increase the threshold to publish in HCI. In economically lean countries much development is made that falls into the category of 'unsustainable', but if this does not happen, healthcare, housing, and economics lag behind WEIRD standards. Moreover, as exemplified in our introduction, these countries tend to have an overall much lower environmental impact. Yet, the Souths are deeply implicated in the economics of technological 'progress', for instance Africa is the sources of most of the rare minerals needed for semiconductors, EVs and photovoltaic cells. This speaks to questions of justice and fairness in accessing technologies, across the world, but also to generations as yet unborn.

5.4 Humour

Humour played an important role in the fiction writing exercise. It allowed for expressing critical thoughts "undercover". Like in for example stand-up comedy, offence becomes more acceptable when packaged as a joke. This made us reflect on the role of humour in dealing with pressing issues of climate change.

As was pointed out by one of our collaborators, joking about climate change can be hurtful and disrespectful towards those already suffering from its consequences in their daily lives. Moreover, using humour might be seen as a form of hiding, keeping the escape route—"I was only joking"—open in case real action is invited. Also, if over-used, it may principally set a too light perspective, reducing the felt need for counter-action.

But there is a sweet spot here to guard. There is a growing body of research showing that positive emotions are vital for climate-change engagement. Climate change is a daunting prospect that creates uncertain futures, and presents chaos and misery, which at the same time is impossible to stop or tackle from an individual perspective. Even among people not directly suffering from climate change, this prospect is fuelling what has been coined climate anxiety [18, 62], which can have a paralyzing (or worse) effect. To tackle these emotions of anxiety and helplessness, researchers are arguing for and proposing more positive approaches to this challenge [51, 64], including Pleasure Activism [14] and Active Hope [48].

6 CONCLUSIONS

In this paper we set out to make sense of our different levels of concern as Sustainable HCI researchers that we might be mopping with the tap running. We reverted to writing fictions, because we had trouble finding a form and tone for a research paper mapping the positive and negative environmental impacts of HCI research.

Through the exercise, we have come a step closer to our aims by gaining a deeper understanding of the problem of perpetuating environmentally unsustainable research practices within HCI, our different views on this problem, and possible consequences of a diversity of solutions. Our reflections form an example of a systematic and collective form of sensemaking in which we moved from fictional What if … scenarios to possible actions. These possible

actions, including prefiguration, building on existing meso-level initiatives in our community, being mindful of diverse perspectives, and nurturing positive emotions, may lead from the current to a more desirable situation.

This does not mean that our exercise has led to a solution. If only it were that easy. Part of our insights point to the complexity, embeddedness and vested interests involved in the problem, yet others present convincing risks of what may at first glance seem to be solutions if applied naively.

What we (hopefully) achieved was to find a form in which to bring fundamental critiques to the HCI community, while remaining respectful and constructive, and not singling people out. Fiction, and in particular humour, played an important role in packaging this critique in a digestible manner. But we are not joking. Our efforts and collaboration stem from a genuine concern with the role HCI plays in perpetuating an unsustainable status quo.

To close with a hopeful note and message—several fictions imagine pivotal change through an impactful HCI publication. This is probably too much to expect. But we do hope that this paper has an effect on our community in raising the question a bit more often: to what extent might my work, and how I do it, contribute to environmental (un)sustainability, and what could I be doing to address this?

REFERENCES

[1] ACM Conference on Designing Interactive Systems. 2023. Call for papers – DIS2024. https://dis.acm.org/2024/call-for-papers/

[2] Oliver Bates, Christian Remy, Callum Nash, and Ben Kirman. 2019. The future of techno-disruption in gig economy workforces: challenging the dialogue with fictional abstracts. In *Proceedings of the Halfway to the Future Symposium 2019 (HTTF 2019)*. Association for Computing Machinery, New York, NY, USA, 1–4. https://doi.org/10.1145/3363384.3363476

[3] Eric P.S. Baumer, June Ahn, Mei Bie, Elizabeth M. Bonsignore, Ahmet Börütecene, Oğuz Turan Buruk, Tamara Clegg, Allison Druin, Florian Echtler, Dan Gruen, Mona Leigh Guha, Chelsea Hordatt, Antonio Krüger, Shachar Maidenbaum, Meethu Malu, Brenna McNally, Michael Muller, Leyla Norooz, Juliet Norton, Oguzhan Ozcan, Donald J. Patterson, Andreas Riener, Steven I. Ross, Karen Rust, Johannes Schöning, M. Six Silberman, Bill Tomlinson, and Jason Yip. 2014. CHI 2039: speculative research visions. In *CHI '14 Extended Abstracts on Human Factors in Computing Systems (CHI EA '14)*. Association for Computing Machinery, New York, NY, USA, 761–770. https://doi.org/10.1145/2559206.2578864

[4] Nic Bidwell. 2022. Brighter Handprints and Lighter Footprints: SIGCHI's Committee for Sustainability. https://medium.com/sigchi/brighter-handprints-and-lighter-footprints-sigchis-committee-for-sustainability-d4c80e11b0bf

[5] Nicola J. Bidwell. 2021. Rural Uncommoning: Women, Community Networks and the Enclosure of Life. *ACM Trans. Comput.-Hum. Interact.* 28, 3 (July 2021), 1–50. https://doi.org/10.1145/3445793

[6] Nicola J. Bidwell, Masbulele Siya, Gary Marsden, William D. Tucker, M. Tshemese, N. Gaven, S. Ntlangano, Simon Robinson, and Kristen ALI Eglinton. 2013. Walking and the social life of solar charging in rural Africa. *ACM Trans. Comput.-Hum. Interact.* 20, 4 (Sept. 2013), 22:1–22:33. https://doi.org/10.1145/2493524

[7] Nicola J. Bidwell, Peta-Marie Standley, Tommy George, and Vicus Steffensen. 2008. The landscape's apprentice: lessons for place-centred design from grounding documentary. In *Proceedings of the 7th ACM conference on Designing interactive systems (DIS '08)*. Association for Computing Machinery, New York, NY, USA, 88–98. https://doi.org/10.1145/1394445.1394455

[8] Julian Bleecker. 2009. Design Fiction: A short essay on design, science, fact and fiction. https://www.systemsorienteddesign.net/wp-content/uploads/2011/01/DesignFiction_WebEdition.pdf

[9] Mark Blythe. 2014. Research through design fiction: narrative in real and imaginary abstracts. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14)*. Association for Computing Machinery, New York, NY, USA, 703–712. https://doi.org/10.1145/2556288.2557098

[10] Mark Blythe. 2017. Research Fiction: Storytelling, Plot and Design. In *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. Association for Computing Machinery, New York, NY, USA, 5400–5411. https://doi.org/10.1145/3025453.3026023

[11] Mark Blythe and Elizabeth Buie. 2014. Chatbots of the gods: imaginary abstracts for techno-spirituality research. In *Proceedings of the 8th Nordic Conference on Human-Computer Interaction: Fun, Fast, Foundational (NordiCHI '14)*. Association for Computing Machinery, New York, NY, USA, 227–236. https://doi.org/10.1145/2639189.2641212

[12] Christopher Booker. 2004. *The Seven Basic Plots: Why We Tell Stories.* A&C Black.

[13] Christina Bremer, Harshit Gujral, Michelle Lin, Lily Hinkers, Christoph Becker, and Vlad C Coroamă. 2023. How Viable are Energy Savings in Smart Homes? A Call to Embrace Rebound Effects in Sustainable HCI. *ACM Journal on Computing and Sustainable Societies* 1, 1 (2023), 1–24.

[14] Adrienne Maree Brown. 2019. *Pleasure Activism.* AK Press. https://www.akpress.org/pleasure-activism.html

[15] Lena Börjeson, Mattias Höjer, Karl-Henrik Dreborg, Tomas Ekvall, and Göran Finnveden. 2006. Scenario types and techniques: Towards a user's guide. *Futures* 38, 7 (Sept. 2006), 723–739. https://doi.org/10.1016/j.futures.2005.12.002

[16] J.M. Carroll. 2000. Five reasons for scenario-based design. *Interacting with Computers* 13, 1 (Sept. 2000), 43–60. https://doi.org/10.1016/S0953-5438(00)00023-0

[17] Lucas Chancel. 2022. Global carbon inequality over 1990–2019. *Nat Sustain* 5, 11 (Nov. 2022), 931–938. https://doi.org/10.1038/s41893-022-00955-z

[18] Susan Clayton and Bryan T. Karazsia. 2020. Development and validation of a measure of climate change anxiety. *Journal of Environmental Psychology* 69 (June 2020), 101434. https://doi.org/10.1016/j.jenvp.2020.101434

[19] Jim Dator. 2009. Alternative Futures at the Manoa School. *Journal of Futures Studies* 14, 2 (2009), 1–18.

[20] Design Research Society Special Interest Group on Design Ethics. [n. d.]. A collection of unethical designs from around the world. https://unethical-designs.framer.ai/

[21] Carl DiSalvo, Phoebe Sengers, and Hrönn Brynjarsdóttir. 2010. Mapping the landscape of sustainable HCI. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '10)*. Association for Computing Machinery, New York, NY, USA, 1975–1984. https://doi.org/10.1145/1753326.1753625

[22] Paul Dourish. 2010. HCI and Environmental Sustainability: The Politics of Design and the Design of Politics. In *DIS 2010 - The ACM Designing Interactive Systems Conference*. ACM, Aarhus, Denmark.

[23] Sophie Dubuisson-Quellier. 2022. How does affluent consumption come to consumers? A research agenda for exploring the foundations and lock-ins of affluent consumption. *Consumption and Society* 1, 1 (Aug. 2022), 31–50. https://doi.org/10.1332/UHIW3894

[24] Anthony Dunne and Fiona Raby. 2001. *Design Noir: The Secret Life of Electronic Objects*. Springer Science & Business Media.

[25] Anthony Dunne and Fiona Raby. 2013. *Speculative Everything: Design, Fiction, and Social Dreaming*. The MIT Press. https://www.jstor.org/stable/j.ctt9qf7j7

[26] Daniel Fallman. 2010. A different way of seeing: Albert Borgmann's philosophy of technology and human–computer interaction. *AI & Soc* 25, 1 (April 2010), 53–60. https://doi.org/10.1007/s00146-009-0234-1

[27] Claudia Garduño García and İdil Gaziulusoy. 2021. Designing future experiences of the everyday: Pointers for methodical expansion of sustainability transitions research. *Futures* 127 (March 2021), 102702. https://doi.org/10.1016/j.futures.2021.102702

[28] Masitah Ghazali, Eunice Sari, and Adi Tedjasaputra. 2022. Asian CHI Symposium: Decolonizing Technology Design in Asia. In *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems (CHI EA '22)*. Association for Computing Machinery, New York, NY, USA, 1–4. https://doi.org/10.1145/3491101.3503701

[29] Global Footprint Network. 2024. Country Overshoot Days 2024. https://overshoot.footprintnetwork.org/newsroom/country-overshoot-days/

[30] Global Footprint Network. 2024. Earth Overshoot Day. https://overshoot.footprintnetwork.org/

[31] Lorna A Greening, David L Greene, and Carmen Difiglio. 2000. Energy efficiency and consumption—the rebound effect—a survey. *Energy policy* 28, 6-7 (2000), 389–401.

[32] Bård Torvetjønn Haugland. 2023. The future is present: Prefiguration in policy and technology experimentation. *Environmental Innovation and Societal Transitions* 48 (Sept. 2023), 100750. https://doi.org/10.1016/j.eist.2023.100750

[33] Karey Helms and Ylva Fernaeus. 2018. Humor in design fiction to suspend disbelief and belief. In *Proceedings of the 10th Nordic Conference on Human-Computer Interaction (NordiCHI '18)*. Association for Computing Machinery, New York, NY, USA, 801–818. https://doi.org/10.1145/3240167.3240271

[34] Josiah Hester. [n. d.]. Why is CHI in Hawaii. https://www.chiinhawaii.info

[35] Maria Håkansson and Phoebe Sengers. 2013. Beyond being green: simple living families and ICT. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '13)*. Association for Computing Machinery, New York, NY, USA, 2725–2734. https://doi.org/10.1145/2470654.2481378

[36] IEA. 2023. The world's top 1% of emitters produce over 1000 times more CO2 than the bottom 1%. https://www.iea.org/commentaries/the-world-s-top-1-of-emitters-produce-over-1000-times-more-co2-than-the-bottom-1

[37] Jason T. Jacques. 2020. CHI 2020: Right here, right now?: A bottom-up approach to estimating the carbon emissions from more than twenty years of CHI conference travel. In *Conference on Human Factors in Computing Systems - Proceedings*. Association for Computing Machinery, New York, NY, USA, 1–13. https://doi.org/10.1145/3334480.3381806

[38] David Kirby. 2010. The Future is Now: Diegetic Prototypes and the Role of Popular Films in Generating Real-world Technological Development. *Soc Stud Sci* 40, 1 (Feb. 2010), 41–70. https://doi.org/10.1177/0306312709338325

[39] Ben Kirman, Joseph Lindley, Mark Blythe, Paul Coulton, Shaun Lawson, Conor Linehan, Deborah Maxwell, Dan O'Hara, Miriam Sturdee, and Vanessa Thomas. 2018. Playful Research Fiction: A Fictional Conference. In *Funology 2*, Mark Blythe and Andrew Monk (Eds.). Springer International Publishing, Cham, 157–173. https://doi.org/10.1007/978-3-319-68213-6_10

[40] Ben Kirman, Conor Linehan, Shaun Lawson, and Dan O'Hara. 2013. CHI and the future robot enslavement of humankind: a retrospective. In *CHI '13 Extended Abstracts on Human Factors in Computing Systems (CHI EA '13)*. Association for Computing Machinery, New York, NY, USA, 2199–2208. https://doi.org/10.1145/2468356.2468740

[41] Neha Kumar. 2023. About CHI in Hawai'i. https://sigchi.org/news/blog/about-chi-in-hawaii/

[42] Neha Kumar. 2023. The SIGCHI Futures Summit 2024. https://medium.com/sigchi/the-sigchi-futures-summit-93728c1b8634

[43] Neha Kumar. 2024. About the SIGCHI Futures Summit. https://medium.com/sigchi/about-the-sigchi-futures-summit-4e6717a406ce

[44] Joseph Lindley and Paul Coulton. 2016. Pushing the Limits of Design Fiction: The Case For Fictional Research Papers. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. Association for Computing Machinery, New York, NY, USA, 4032–4043. https://doi.org/10.1145/2858036.2858446

[45] Conor Linehan, Ben J. Kirman, Stuart Reeves, Mark A. Blythe, Theresa Jean Tanenbaum, Audrey Desjardins, and Ron Wakkary. 2014. Alternate endings: using fiction to explore design futures. In *CHI '14 Extended Abstracts on Human Factors in Computing Systems (CHI EA '14)*. Association for Computing Machinery, New York, NY, USA, 45–48. https://doi.org/10.1145/2559206.2560472

[46] Sebastian Linxen, Christian Sturm, Florian Brühlmann, Vincent Cassau, Klaus Opwis, and Katharina Reinecke. 2021. How WEIRD is CHI?. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. Association for Computing Machinery, New York, NY, USA, 1–14. https://doi.org/10.1145/3411764.3445488

[47] Joycelyn Longdon. 2024. Climate in Colour. https://www.climateincolour.com/

[48] Joanna Macy and Chris Johnstone. 2012. *Active Hope: How to Face the Mess We're in without Going Crazy*. New World Library.

[49] Lara Monticelli. 2021. On the necessity of prefigurative politics. *Thesis Eleven* 167, 1 (Dec. 2021), 99–118. https://doi.org/10.1177/07255136211056992

[50] Evgeny Morozov. 2013. *To Save Everything, Click Here: Technology, Solutionism, and the Urge to Fix Problems that Don't Exist*. Penguin Books.

[51] Roosmarijn Ovaa and Dan Lockton. 2024. Design as a Climate Approach Investigation Tool: Exploring Effects of Collective Governmental Approaches on Climate Change Perspectives. In *Climate Change and Mental Health Equity*. Springer.

[52] Daniel Pargman, Elina Eriksson, Rob Comber, Ben Kirman, and Oliver Bates. 2018. The futures of computing and wisdom. In *Proceedings of the 10th Nordic Conference on Human-Computer Interaction (NordiCHI '18)*. Association for Computing Machinery, New York, NY, USA, 960–963. https://doi.org/10.1145/3240167.3240265

[53] Daniel Pargman, Elina Eriksson, Rob Comber, Ben Kirman, and Oliver Bates. 2018. The Futures of Computing and Wisdom: Workshop at NordiCHI 2018. https://futuresnordichi.wordpress.com/

[54] Daniel Sapiens Pargman, Elina Eriksson, Oliver Bates, Ben Kirman, Rob Comber, Anders Hedman, and Martijn van den Broeck. 2019. The future of computing and wisdom: Insights from Human–Computer Interaction. *Futures* 113 (Oct. 2019), 102434. https://doi.org/10.1016/j.futures.2019.06.006

[55] Birgit Penzenstadler, Bill Tomlinson, Eric Baumer, Marcel Pufal, Ankita Raturi, Debra Richardson, Baki Cakici, and Ruzanna Chitchyan. 2014. ICT4S 2029: What will be the systems supporting sustainability in 15 years. Atlantis Press, 30–39. https://doi.org/10.2991/ict4s-14.2014.4 ISSN: 2352-538X.

[56] Anne-Kathrin Peters, Rafael Capilla, Vlad Constantin Coroamă, Rogardt Heldal, Patricia Lago, Ola Leifler, Ana Moreira, João Paulo Fernandes, Birgit Penzenstadler, Jari Porras, et al. 2024. Sustainability in computing education: A systematic literature review. *ACM Transactions on Computing Education* 24, 1 (2024), 1–53.

[57] James Pierce. 2021. In Tension with Progression: Grasping the Frictional Tendencies of Speculative, Critical, and other Alternative Designs. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. Association for Computing Machinery, New York, NY, USA, 1–19. https://doi.org/10.1145/3411764.3445406

[58] Elke Pirgmaier. 2020. Consumption corridors, capitalism and social change. *Sustainability: Science, Practice and Policy* 16, 1 (Dec. 2020), 274–285. https://doi.org/10.1080/15487733.2020.1829846

[59] Christian Remy, Oliver Bates, Alan Dix, Vanessa Thomas, Mike Hazas, Adrian Friday, and Elaine M Huang. 2018. Evaluation beyond usability: Validating sustainable HCI research. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. 1–14.

[60] Katherine Richardson, Will Steffen, Wolfgang Lucht, Jørgen Bendtsen, Sarah E. Cornell, Jonathan F. Donges, Markus Drüke, Ingo Fetzer, Govindasamy Bala, Werner von Bloh, Georg Feulner, Stephanie Fiedler, Dieter Gerten, Tom Gleeson, Matthias Hofmann, Willem Huiskamp, Matti Kummu, Chinchu Mohan, David Nogués-Bravo, Stefan Petri, Miina Porkka, Stefan Rahmstorf, Sibyll Schaphoff, Kirsten Thonicke, Arne Tobian, Vili Virkki, Lan Wang-Erlandsson, Lisa Weber, and Johan Rockström. 2023. Earth beyond six of nine planetary boundaries. *Science Advances* 9, 37 (2023), eadh2458. https://doi.org/10.1126/sciadv.adh2458

[61] William J Ripple, Christopher Wolf, Jillian W Gregg, Johan Rockström, Thomas M Newsome, Beverly E Law, Luiz Marques, Timothy M Lenton, Chi Xu, Saleemul Huq, Leon Simons, and Sir David Anthony King. 2023. The 2023 state of the climate report: Entering uncharted territory. *BioScience* (Oct. 2023), biad080. https://doi.org/10.1093/biosci/biad080

[62] Julia Sangervo, Kirsti M. Jylhä, and Panu Pihkala. 2022. Climate anxiety: Conceptual considerations, and connections with climate hope and action. *Global Environmental Change* 76 (Sept. 2022), 102569. https://doi.org/10.1016/j.gloenvcha.2022.102569

[63] Eunice Sari, Masitah Ghazali, Adi B. Tedjasaputra, Yohannes Kurniawan, Thippaya Chintakovid, Siranee Nuchitprasitchai, Ellya Zulaikha, Noris Binti Mohd Norowi, and Tamas Makany. 2022. SEACHI 2022 Symposium: Bringing Equality, Justice, and Access to HCI and UX Agenda in Southeast Asia Region. In *Extended Abstracts of the 2022 CHI Conference on Human Factors in Computing Systems (CHI EA '22)*. Association for Computing Machinery, New York, NY, USA, 1–5. https://doi.org/10.1145/3491101.3504031

[64] Claudia R Schneider, Lisa Zaval, and Ezra M Markowitz. 2021. Positive emotions and climate change. *Current Opinion in Behavioral Sciences* 42 (Dec. 2021), 114–120. https://doi.org/10.1016/j.cobeha.2021.04.009

[65] Neil Selwyn. 2023. Digital degrowth: toward radically sustainable education technology. *Learning, Media and Technology* (2023), 1–14. https://doi.org/10.1080/17439884.2022.2159978

[66] Vishal Sharma, Neha Kumar, and Bonnie Nardi. 2023. Post-growth Human–Computer Interaction. *ACM Trans. Comput.-Hum. Interact.* (Sept. 2023). https://doi.org/10.1145/3624981

[67] M. Six Silberman, Lisa Nathan, Bran Knowles, Roy Bendor, Adrian Clear, Maria Håkansson, Tawanna Dillahunt, and Jennifer Mankoff. 2014. Next steps for sustainable HCI. *interactions* 21, 5 (Sept. 2014), 66–69. https://doi.org/10.1145/2651820

[68] Carla Simone, Ina Wagner, Claudia Müller, Anne Weibert, and Volker Wulf. 2022. *Future-proofing: Making Practice-Based IT Design Sustainable*. Oxford University Press.

[69] Theresa Jean Tanenbaum, Marcel Pufal, and Karen Tanenbaum. 2016. The limits of our imagination: design fiction as a strategy for engaging with dystopian futures. In *Proceedings of the Second Workshop on Computing within Limits (LIMITS '16)*. Association for Computing Machinery, New York, NY, USA, 1–9. https://doi.org/10.1145/2926676.2926687

[70] Gabriel Zucman. 2019. Global Wealth Inequality. *Annual Review of Economics* 11, Volume 11, 2019 (Aug. 2019), 109–138. https://doi.org/10.1146/annurev-economics-080218-025852