# The Richness of Designing for Eco-Social Change

## Creative Practice, Transformative Futures and Living within Limits

Lara Houston
L.Houston@sussex.ac.uk
University of Sussex
Brighton, UK

Ann Light
Ann.Light@sussex.ac.uk
University of Sussex
Brighton, UK

Cassie Thornton
Futurething@gmail.com
The Hologram &
Re-imagining Value Action Lab

## ABSTRACT

This year marks the 50th anniversary of the influential Club of Rome report *Limits to Growth*, which used computer modelling to show that, on a finite planet, current human resource use cannot ultimately be sustained. In this paper we use the anniversary as an opportunity to reflect on the framing of limits in HCI. Following recent work in design and social science, we ask whether the idea of limits is an effective way to imagine, prompt and manage cultural change in participatory, sustainable HCI. Drawing from our experiences investigating participatory creative practice in the CreaTures project, we suggest that limits-led framings could be usefully held in tension with ideas of abundance. As researchers and practitioners of sustainable design, our job is often asking others to use less – whether that involves consuming fewer materials, less energy; or indeed even 'un-making' particular practices. We argue that directive change can be reconceptualised as 'eco-social' transformation: a fusion of care-infused ecological and social sensibilities to create existential change that would impact lifestyle and political choices (and technology use), turning to potentially abundant human resources of imagination, reflection and solidarity. We offer the example of *The Hologram*, a feminist economist healthcare art project situated online, to illustrate this potential.

## KEYWORDS

eco-social sustainability, SHCI, limits, art, design, creative practice

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## 1 INTRODUCTION

*Nature exults in abounding radicality, extremism, anarchy. … The whole creation is one lunatic fringe. No claims of any and all revelations could be so far-fetched as a single giraffe.*
—Annie Dillard, *Pilgrim at Tinker Creek* [5]

This year is the 50th anniversary of the *Limits to Growth* report by the Club of Rome, in which the concept of 'limits' was first proposed to think about incipient crises of population, resources and environment [25]. More recently, Kate Raworth's doughnut economics [35] has articulated both the overuse of resources in the Global North and the under-development found in many parts of the Global South, highlighting the need for ecological justice in regions suffering the brunt of devastation, which exist without the benefits that colonial powers still enjoy. One of the 21st century's greatest challenges is the management of resources.

In this paper, we contrast the 'progress as growth'/'limits to growth' dichotomy that has grown up in sustainability discussions with (post-growth) concepts from social science and creative practice. Our argument is that conceptions of limits can co-exist with more positive visions of resource management that look beyond materials and a zero-sum game understanding of resources as finite. To discuss this alternative framing, we offer a case study of a new social structure, designed to resist and supplant capitalism and transmit a care ethic. This, we suggest, offers an example of abundance in both its ambitions and its mechanisms of reproduction.

Our contribution is to balance the idea of limits, with its urgent message but material focus, with an 'eco-social' construction of change that relies on emphasising the positive. Light has elsewhere argued that being in thrall to a global market that rejects anything abundant (air, water, creative labor, signs of life) - and values only scarcity and the price that can be placed on it - not only corrupts our habitats, but is a 'subjugation of our abilities as flexible, creative creatures working together as part of the nature-culture of being entangled' [19:38], such that our abundant resources are not only unequally distributed but starting to dwindle. This paper focuses on these creative and flexible

aspects in a species that has the power to change the world, but also to change itself.

## 1.1 Limited Humanity in 'Limits to Growth'?

*Limits to Growth* [25] (LtG) modelled a world in which economies and populations were growing, but resources stayed finite. Here, before we look at alternative ideas of resourcing, we examine this premise. In the 50 years since publication, growth has followed much the path suggested. Naomi Klein pointed out, in 2014, that, before the neoliberal era when markets were allowed to take pre-eminence in policy, and legislation protected this arrangement, emissions growth had been slowing from 4.5% in the 1960s to 1% in the 1990s [17:80]. But that changed. David Harvey, the Marxist economic geographer, specifically links the 'escalating depletion of the global environmental commons (land, air, water)' and 'proliferating habitat degradations that preclude anything but capital intensive modes of agricultural production' with neoliberalism [10:13]. He comments that the neoliberal system has not created growth in the world's economies, as it was claimed it would[1], but has (re)instated an upper class with wealth/power, leaving the dominant global culture hands-off and laissez-faire. This political move has made the management of ecological and social processes more difficult.

In the meantime, several fossil fuel corporations and technology companies have expanded their annual revenues to be bigger than that of many countries, not only sitting beyond existing mechanisms of compromise (such as the United Nations), but also making these companies too big to regulate. Against these trends, LtG ideas have fed into still-nascent ambitions for de-growth and post-growth, informing the LIMITS workshop over the years.  However, population figures are not as indifferent as the market, being affected by better education, fear over future living conditions and trends in fertility, leading some to predict not just stabilization but decline [1]. Then, a question is how the LtG model has understood our capacity for reflexive evolution. If populations are not growing, but instead ageing and starting to shrink, everything hangs on desire (and its manufacture). LtG seems largely modelled on an insatiable Malthusian understanding of humankind in this respect.

As degrowth scholar Giorgos Kallis argues in his book *Limits: Why Malthus Was Wrong and Why Environmentalists Should Care*, it is not that resource limits do not exist, but that much thinking about limits creates particular types of subject through its reasoning. Malthus, Kallis argues, invented the 'unlimited – and not to be limited – subjects of modern economics, those with an instinct and a call to work and to subdue and populate the earth' [14:30]. For the "homo economicus" who knows no limits, the world is limited by definition (it can never satisfy or provide everything desired). Kallis writes: '[u]nlike the abundant world

imagined by the romantics, the other important predecessors of the environmental movement, the world Malthus invented was stingy. And it was stingy because our wants were always excessive. It is this dogma of insufficiency, or scarcity, that economics, the science that emerged to explain, justify and stabilize capitalism, turned into its founding principle' [14:30].

If this is contrasted with philosophies of living in harmony with what the land can produce (as found in Indigenous literature, e.g. Kimmerer [15], Pascoe [33]), we see that limits are an ideological construction as much as (or more than) a lived material fact.

The idea of a limit exists in a measurement paradigm. For a limit to have meaning, it must be a boundary between moderation and excess, marked by numbers that reveal transgression. This sites all limits rhetoric within a scientific-modernist tradition, but that may not be the most beguiling tradition with which to woo adherents. Ecological sensitivity has demonstrated that a sense of abundance manifests through care – a different, but important, framing of resourcing and one that relies on integrated social and ecological logics. Here, we build on recent thinking on care not only as a human (labour) relation, but as an ethical praxis that also extends to other-than-humans [28,34]. Care is what we do together to make the world a (more) liveable place.

## 2. DEFINING LIMITS

In 2015, the attendees of the first LIMITS workshop set out their connection to the term limits. LtG was clearly foundational: Cerratto Pargman and Joshi write: 'our understanding of "limits" is firstly grounded in the results reported in Limits to growth…pointing out the planetary limits in relation to the continued growth of the economy' [10:n.p.]. LtG signalled a profound tension 'between thinking, designing and building technology for a world without economic and ecological limitations (and primarily regulated by a continuous growth of finance capital)' versus 'a world with finite natural resources' [10: n.p.]. Many workshop contributors were concerned not only about the direct use of non-renewable resources by computing infrastructures, but with industry's pursuit of perpetual growth; and the fact that it provides the tools for other industries to pursue the same imperative.

Encountering the idea of limits may be particularly challenging in an industry that has for so long appeared to defy material limits, in radically increasing computing capacity, at the same time as shrinking material volume (described in terms akin to 'natural' laws, i.e Moore's Law or Nielsen's Law). A central belief in the technology sector more widely is that 'human ingenuity can surpass any and all other limits' [31:86]. Researchers are accustomed to the fast-pace of change wrought by technology. Silberman argues that 'in the short term technology is largely an amplifier of existing human intent and capacity… [i]n the long

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[1] Neoliberalism was presented as a more equitable economic system than central planning could be, leading to (never-materialized) distributed wealth for all.

term, technology creates entirely new possibilities for action and forms of life that are difficult to predict or compare quantitatively with previous forms' [15:n.p.]. Taken together, all of these factors means that reckoning with the idea of limits to progress can feel like a rupture, or (as Silberman calls it) a new 'age of consequences' [15:n.p.].

The original LtG report is an example of anticipatory governance: 'governing in the present to adapt to or shape uncertain futures' [30:1]. Indeed, the authors use computational modelling to try to predict a range of future scenarios as realistically as possible, with the intention to enable strategic planning and risk reduction. Given the restlessness of the technology industry, it has been difficult for any community to anticipate medium or long-term trajectories of technological change. In LIMITS, research has focussed on direct concerns 'measuring first-order (energy use, e-waste production, emissions etc.) effects' [2:n.p.]. Well-developed principles emphasise robust and decentralised designs [3]. However, 'second and third order effects (e.g. changes in user behavior and broader societal changes) are more challenging to measure and remain open' [2:n.p.]. Here, the idea of 'limits-aware' computing has been a meaningful intervention, in drawing attention to the resource-limited world that we live in.

At the same time, the community has retained a focus on present or near-future scenarios. A 2018 overview by Nardi et al. outlines the three core topics that the community have coalesced around: 1) current and near-future ecological, material and energy limits; 2) the impact that these limits are likely to have on the field of computing; and 3) the way new forms of computing may help support wellbeing while living within these limits [31:87]. Nardi et al. recognise the opportunities for imagining the better futures that an acceptance of limits brings, writing that: 'LIMITS is concerned with the material impacts of computation itself, but, more broadly and more importantly, it engages a deeper, transformative shift in computing research and practice to one that would use computing to contribute to the overall process of transitioning to a future in which the well-being of humans and other species is the primary objective' [31:87].

This commitment to transition richly appears in empirical work within LIMITS, for example on peer sharing, permaculture, and circular economies [e.g. 9,18,19]. These are often analyses of inspiring initiatives that propose more sustainable arrangements. They demonstrate the community's practical interest in both social and ecological aspects of sustainability. Fewer studies take Nardi et al.'s 'processes of transitioning' as their core focus. This perhaps reflects top-down dynamics of funding in HCI and related fields, which tends to prioritise instances of novel innovation. However, Ceratto-Pargman and Joshi's extended conversation with Stokol and collaborators' social ecological perspective [2] is an important example that links natural dimensions (described as a 'material-ecological facet') and dimensions of meaning, values and moral judgements (the 'socio-semiotic facet') within a limits

framing. These are operationalised through the notion of 'capital' so that the two dimensions 'interact, support or conflict with each other' [2:n.p.] in a multidimensional manner, that enables a more holistic framing.

## 2.1 Computational subjectivity at LIMITS

If Kallis names the endlessly desiring Malthusian subject as central to the idea of limits in neoliberal economics, then what alternative figures have LIMITS researchers drawn upon to question growth? Who exactly is becoming limits-aware? Silberman locates the ethical conundrums inside workers themselves: '[a] crucial question for information systems workers in the age of consequences is: how can we adapt to a new context in which the operating framework within which our field was conceived is no longer seen as universally valuable, and indeed is seen as a source of problems?' [21:n.p.] Knowles and Eriksson also use their own personal experiences of conflict and complicity to call into being a more radical practitioner. They reflect: 'we have relegated ourselves to (slightly) improving ICT efficiency, developing behavior change apps and clever interventions to automate out people's intransigent consumer inefficiencies, and trying to instil in people a desire to retain their obsolete devices. If we as a community are going to have impact…[we] are going to have to overcome our own psychological barriers toward becoming much more radical in our ambitions' [9:n.p.].

The LIMITS community has considered the subjective, social and psychological aspects of acting in a world with limits partly through these personal experiences of 'cognitive dissonance when trying to incorporate scarcity with the abundance of progress' [18, n.p.]. One important way that the challenge of limits is resolved, then, is inside practitioners, who participate in LIMITS workshops in order to engage with these ethical questions together. There is a risk that personal subjectivities bear the weight of planetary limits, without being externalised into more systemic forms of action. Many other sustainability fields are also struggling with the move from the general position of questioning growth to the complexity of reaching beyond core specialisms to make critiques of capitalism itself. Feola, for example, notes the interdisciplinary community that studies sustainability transformations has largely 'failed to engage in analyses or critiques of capitalism' [7:241].

Latterly, LIMITS research has begun to embrace more hopeful perspectives about life within limits. Even in the first workshop Gui and Nardi recognised that 'sustainability in computing has largely focused on a theme of less: less energy consumption, less waste' [6:n.p.]. Their study of transition efforts in the UK and China 'shows that we can also focus on a generative, positive theme of more to counter limits: more community, more shared activity, more collaboration, more shared moral sense of sustainability… How to design technology to foster the "mores" is a genuine challenge we should address' [6:n.p.].

Recent papers point towards regenerative futures, creating a 'Transformative Mindset' that prioritises ten principles,

including: 'socioecological restoration over economic justification; transformative system change over business as usual... values change over behaviour modification... empowering engagement over imposed solutions' [23:22]. Indeed, Mann et al. single out the need for 'living positive futures over bleak predictions' [23:22]. This is in line with Rayner and Minns reflecting on the effectiveness of science communication, which must be 'more than 'narrators of doom', but recognise the need for 'active hope', constructed from realistic goals, imaginable paths, doable tasks and a meaningful role in addressing the problems at hand' [36:3]. We argue, along the same trajectory, that designing to foster 'mores' is more easily done from a subjectivity grounded in abundance (rather than scarcity), and that creative practice can offer one wellspring for inspiration and skilful methods of negotiating ethical relations in everyday practice.

## 3. FROM ENVIRONMENTAL TO ECO-SOCIAL

The construction 'eco-social' referred to in our paper is less a neologism and more a recognition that there is no ecological without social because it is the massing of human intention and change (and the disproportionate impact of human activity) that affects all other life and possibility for life, partly played out through the Anthropocenic aspects of climate collapse. It is, further, a reminder that without social and environmental justice, mass mobilization for change will be unpleasant if not impossible. Last, it is an acknowledgment that the world we have is not the one that most people wish to sustain, but a planet damaged by extractivist and exploitative values and actions. Thus, working towards eco-social futures is a political undertaking, which involves bringing people together to see themselves as agents of change – not just as individuals asked to reduce their lifestyles or take a cut in living standards, facing a future identified as poorer or 'thinner' [12] with less permission to use central heating or air conditioning, but as groups embarking on a journey to make futures that evolve from different ontological starting points. Eco-social change means systemic change and that which needs to happen for a more eco-socially sustainable world.

Our definition of the eco-social borrows something from eco-social-*ist* politics, in that it recognises the significance of the historical rise of capitalism in the splitting of Man and Nature, and Civilized from Barbarian, for example in Jason Moore's arguments about the 'geocultural' trajectory of contemporary capitalism [29]. Moore argues that Malthus' *Essays* were 'powerful statements of bourgeois naturalism' whose function was 'to explain capitalist inequity and justify bourgeois politics-as-usual through an abstract Nature' [29:4]. Critiques to capitalism were avoided by externalising the poor into Nature – their conduct supposedly governed by a natural law. Following Science and Technology Studies approaches, we understand the categories of 'nature' and 'society' as socially constructed outcomes of these complex historical processes (i.e. they are not categories that hold any

explanatory power, but can be deconstructed to inform on evolving value systems)[4].

While our use of 'eco-social' defies these artificial separations and links the political to the ecological, we are also indebted to broader movements within climate and social justice activism for this framing. We challenge the trope of limits as a way to think about planetary boundaries, since, in a scientific-modernist paradigm (as Kallis points out [13]), this idea is so tightly wound up with the endlessly desiring Malthusian subject. Though planetary boundaries are real, thinking in terms of limits alone can constrain our thought as we seek transformative change to better futures. We turn instead to ideas of abundance and practices of care, since they offer new tropes to think with but also new modes of concrete, everyday practice. Care, as we understand it (after Mol et al. [28], Tronto [42] and Puig de al Bellacasa [34]), is a practical and collective accomplishment and an ethical proposition that is resolutely local in nature: a logic of 'persistent tinkering in a world full of complex ambivalence and shifting tensions' [28:13]. Thus, the idea of the eco-social signals the importance of building and maintaining relations that defy the transactionalist paradigm and embody practices of caring about and caring for.

Only by embodying and enacting other ways of relating to one another (and to all others) can we see how these practices extend beyond our personal worlds, i.e. how to talk relationally beyond the personal. This gives a chance to produce collective wisdoms that are multi-generational, multi-scalar, relational, and pluralist. It introduces an aesthetic focus, in the sense that the eco-social means attending to details and composition, and to feelings and relations. While care work takes finite time and bodies (and may be invisible, exploiting and gendered), the relational aspects of a caring ethics offer an unbounded alternative to the limits of transactional encounter.

### 3.1 CreaTures and the Eco-Social

The EU-funded CreaTures project (Creative Practices for Transformational Futures) investigates the role of participatory-oriented creative practices in helping people imagine transformative, caring and sustainable futures and bringing them into being. A central tenet of the project is that creative practices (broadly understood) are already actively linking designers, artists, cultural workers and citizen-led collectives around the complex issues of climate change and social inequalities. The project recognises that one of the strengths of these practices is their use of a wide range of aesthetic, affect-driven, and participatory approaches, but that – at the same time – these practices are often poorly resourced and badly understood [20, 21]. Given that participatory processes effecting transformation are spread across different disciplines and described in different ways, the project focuses on common processes towards eco-social transformation to create insights that could allow participatory projects to redouble their efforts while making them visible and legible to

policy-makers. A way that it has come to characterize its interests is to research and make eco-social transformation.

## 3.2 How CreaTures works

Interdisciplinary forms of knowledge production are increasingly recognized as required to understand, and to respond to large-scale sustainability challenges [14]. The CreaTures project brings together a consortium of eleven partners: four universities, five creative organisations (in art, design and social change) plus two 'knowledge brokers' in sustainability and open knowledge production (acting as an interface with governing actors such as arts funders and policy-makers).

    Across the 3-year project period the creative partners in the consortium have developed 13 new creative works (including our case study *The Hologram*). In addition, a further 8 have been commissioned from external partners. Works have included participatory walks through scientifically instrumented forests; games where participants roleplay as plants and animals; large scale installations of burned and regenerated forests; board games on commons ownership; courses on mushroom-materials, and art-science collaborations to build a shrine to seaweed. We call the section of the project that supports these activities the 'Laboratory,' since it has acted as a test-bed for research. Each creative partner has been collaborating with a researcher to document the ideation, production and implementation of their work, creating a detailed corpus of data about how creative practices affect groups, from audiences and participants, to peer networks and institutions, to civil society and the media.
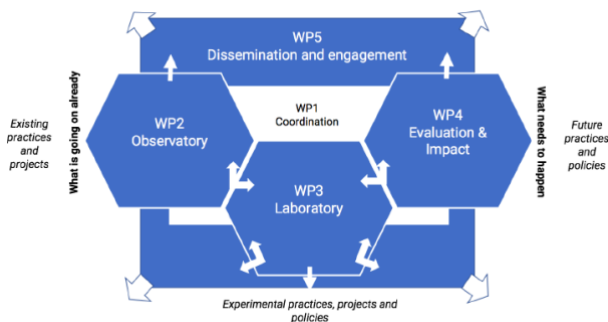


Figure 1: The CreaTures project structure

    These activities are surrounded by several other 'work packages' (Figure 1), which take a wider look at trends within creative practice and eco-social sustainability (with a bias towards Europe, our funded area); investigate how we might evaluate these contributions to eco-social transformation, both in 'formal' evaluation (i.e. by funders), and informal learning and reflection by creative practitioners; and ensure the project's research engages a range of stakeholders, paying particular attention to issues of inclusion. As such it is an action research project, both creating alternatives and observing how these might come about through in-depth study of practices. *The Hologram* is a project

supported and researched by CreaTures (in that CreaTures provided some funding to support parts of the project, and the two first authors have participated, observed, reflected with and now co-write an account of it with the creator, the last author). We use it here for our case study, to reflect on the deep, care-centred relationships that nurture abundant relations.

## 4. CASE: THE HOLOGRAM

The seed for *The Hologram* was planted in the aftermath of the global financial crisis of 2008. The crisis hit particularly hard in Thessaloniki, Greece. Unable to repay its sovereign debt, the Greek government made wide-ranging cuts to public health. A movement of solidarity health clinics staffed by volunteers emerged to fill the gap, providing mutual aid to residents who could no longer pay the hospital charges. This became a crucible for experimentation around different models of healthcare, made more pressing again in the wake of the refugee crisis of 2015.

    In 2017, artist and debt activist Cassie Thornton (one of the authors of this paper) visited the Thessaloniki Group for a Different Medicine (GDM), to learn more about their Integrative Model, in which patients (Incomers) are welcomed by a general physician, a psychotherapist, and a social worker (or volunteer) during a 90 minute induction. Taking a broad, holistic view of health, they survey the Incomer's mental, emotional and physical health, including living conditions, work, and social networks. They invite the Incomer to become an active participant in the management of their own health – understanding this as a central form of their health treatment, while at the same time embedding this in collective support structures (and therefore undermining the neoliberal tendency to offload care onto individuals under the guide of self-sufficiency). In much Western care, patients are 'typically seen either as a body, or a worker, or a person, but never as all three at once' [40:5]. The Integrative Model sets about undoing that alienation. The GDM clinic explained to Thornton that they 'are trying to make a hologram of every person: a three-dimensional image of health' [40:7–8].

### 4.1 Exploring The Hologram practice

Following this visit, Thornton began to play with this structure and visual metaphor in her art practice. She developed a social practice, where a person known as 'the hologram' invites three friends or acquaintances ('the triangle') to meet on a regular basis to discuss their physical, emotional and social health. (Written in upper case, *The Hologram* refers to the project and the practice, and written in lower case it refers to the person). In February 2020, she embarked on a residency with the non-profit arts organization Furtherfield in London, UK, working with curator Ruth Catlow and co-facilitator Lita Wallis. They planned to run a series of courses to develop and stabilise the nascent protocol, and to see how the practice (of 'social holography') might develop and spread. However, just weeks later, the shutters came down on Furtherfield as the SARS-CoV-2 pandemic spread across the world,

and countries went into a rolling schedule of lockdowns. Like many other artists, Thornton moved her in-person course to a video-conferencing platform, joining a collaborative experiment where in-person, participatory, social practice art became abruptly mediated.

*The Hologram* met CreaTures just after this first online course had taken place. One of the authors (Houston) began an ongoing series of interviews with Thornton, plus collaborators Catlow and Wallis. This case study is based on the analysis of these 11 interviews, plus Houston's auto-ethnography of the second online course (in late 2020), and Light's auto-ethnography of the third online course (in early 2021).

Attending the course is not necessary to participate, but it has provided a way to develop the practice and is building a community around it. Courses have been free, six-weeks long (at outset) and have brought together a group of about 30 people each time to experience and learn the protocol. Many of the online attendees to date were people that could not have attended an in-person meeting in North London. (The language of the online meetings was English, with participation from English speakers in Europe and North America, but the mix was diverse in many other respects).

The first session of each course starts with a demo. We use an auto-ethnographic vignette from one of the researchers to give a sense of the protocol, and the atmosphere that it tends to evoke. *'A course facilitator becomes the hologram, and three volunteers take the role of her triangle, moving through the five phases of a hologram meeting. First, each group member makes a shape with their body, and the others comment on it, as a way to open the conversation. This is called the 'stuck dance'. Second, the hologram 'marks the task' that she'd like to address today with her triangle – she's at a transition point in her life and wants to be surrounded by positive feelings. Third, the triangle members gently ask her clarifying questions, using the "we" pronoun instead of "I" (i.e. "we were wondering…"), which seems to create a powerful collectivising effect. Fourth, the session ends with a set of reflections: the triangle members provide feedback to the hologram in the form of patterns, wishes or provocations. Finally, before ending, the triangle members are able to take time to reflect on their own experience…*

*In answering their questions, the hologram allows herself to become vulnerable, even in front of this unknown audience sitting in the mediated darkness. During the reflection time, the triangle member tells the hologram how privileged he felt to take part in the meeting. In that moment the hologram's vulnerability is transmuted into radical acceptance. I feel my heart swell...'* (researcher notes, 2020)

We have used a vignette here specifically to evoke the styles of interaction unfolding within the group because – like many socially-engaged practices – *The Hologram* is more than a series of abstracted steps, but carries with it a particular aesthetic of interaction. This, of course, was catalysed during the COVID-19

crisis when we were confined to our homes, trying to understand how video-conferencing platforms could enable new (or more intense) mediated intimacies. *The Hologram* practice was consequently shaped by the communication spectra offered by the video-conferencing platform. Several simple cues help the space to take on a different atmosphere. The protocol includes embodied sensation, which is felt and then shared through the 'stuck dance'. Patterns of speech are different from a normal conversation; deliberate pauses are left after each utterance, creating an atmosphere of deeper listening, prompting more considered responses and giving a sense of balance between speakers. There is no advice-giving, just encouragement through questioning. It functions like a therapeutic space, providing a process to bring trust and care into/through every interaction.

## 4.2 Unmaking, resisting and extending

Thornton created the practice of 'social holography' with transformative aims. She explains: 'at its broadest and most ambitious scale, *The Hologram* is intended as an open-source, peer-to-peer, viral social technology for de-habituating humans from capitalism' [40:20, emphasis added]. Since capitalism is a phenomenon that 'deeply influences how we relate to one another, how we interact, how we imagine ourselves and one another, even how we talk and feel', *The Hologram*, as a social technology, exists to change 'cultures of financialization' [9] by giving people experiences of radical acceptance and a structure to re-create these on a regular basis, over time, with trusted others. Neoliberal subjectivity – that image of an endlessly desiring individual struggling in a world of limited resources – is being carefully untethered to make room for something far more abundant in commitment. Even the structure of the triangle is abundant: each triangle member supporting the central hologram is encouraged to build their own triangle of social support. For every hologram signed up, three more are to be born out of the new triangle. *The Hologram* un-makes in specific ways, starting with the micro-interactions of everyday life, as many feminist projects do; repairing internal feelings of brokenness by understanding the reality of system dynamics. This is necessary because 'neoliberalism valorizes individual autonomy and self-interest and asserts its normative superiority while treating care, which as an activity brings human dependency and fragility into focus, as a sign of personal weakness and defect' [35:n.p.].

It is intended to promote healing, providing whole-body extended experiences of trust and care. Healing means practising different skills. One course participant (who later trained as course facilitator) described the skills they had learned from the course: patience, courage, listening, questioning and emotional stamina – the experience "of not needing to have the answer and feeling confident enough to try something, knowing it might not work out" (interview, 2021). Another felt the course boosted participants' sociological imagination: "your capacity to imagine yourself as part of a whole and imagine how that whole impacts

you" (interv., 2021). By its nature, the tending and multiplication of care in everyday practice flow outwards beyond our concerns for humanity, as Tronto explains: 'care can be viewed as a species activity that includes everything that we do to maintain, continue, and repair our world so that we can live in it as well as possible. That world includes our bodies, our selves, and our environment, all of which we seek to interweave in a complex, life-sustaining web' [42]. Thus, *The Hologram* is profoundly eco-social in its focus – following emergent work that bridges feminist, materialist scholarship with concerns for environmental phenomena (such as María puig de la Bellacasa's Matters of Care [34]).

This art, then, is not just a platitudinous expression of solidarity, but a protocol and structure for care designed to resist the marginalized shapes that care is forced into. Being a part of a hologram structure requires little material investment, apart from 90-120 minutes of video-conference bandwidth, using computing equipment, at a frequency of, say, 6 weeks, more or less. It is largely a resource-less activity within the limits rhetoric. We are mindful that computer cycles are used and this is never negligible (in fact, in aggregate, it has a significant cost [16]), but we can also ask what is generated. First, the hologram knows that, at a time of crisis, they can call their triangle into being for support. This is transformative in itself (i.e. merely knowing the triangle is there for you can be a healing factor). This first asset is resource-free, especially once the hologram knows that their triangle is similarly equipped (thus generating no guilt at receiving care). Second, the chance to have one's concerns acknowledged and accepted, as well as to reflect in a tranquil and accepting space, can be profound. Last, particularly for countries where health insurance is too expensive for many, *The Hologram* can provide a missing dimension of social-emotional care.

## 4.3 Disseminating as abundance

The assumption at the heart of *The Hologram* project is that intimate transformations will aggregate in ways that change wider capitalist relations towards structures that are more sustainable for humans and earth systems. Given the project's huge ambition, Thornton has given thought to how the project can expand, and – as noted – has embedded a viral scaling mechanism inside the practice itself. When a new triangle is formed, the hologram is tasked with supporting triangle members to set up new *hologram* groups for themselves. This is not merely a dissemination mechanism but is central to the relations of care. The hologram is never the care-giver for triangle members – the roles do not rotate. Catlow explains 'that it's equally important to take responsibility for the health of your triangle members by helping them to learn how to be a hologram themselves' (interv. 2020). This central convention allows for reciprocation between the triangle members (who are providing care) and the hologram (who is receiving it) without the transactional requirement that the exchange be equalized. Instead, relations of care radiate outwards as holograms invite triangles, who become holograms, who invite

triangles. In designing this viral peer-to-peer form, Thornton was inspired by the Black Panther Party's sharing of acupuncture techniques within their activist movement [26]. This dissemination mechanism is actively designed to disrupt power relations where (under neoliberal conditions) interpersonal care labour is externalised from economically active subjects, into the private sphere – or relegated to the bottom of the labour market, to be picked up by women and other minoritized groups [43].

Since the lockdowns of 2020, *The Hologram* has grown into a loose collective of people, with a virtual space on the Discord platform where organising is conducted in a series of informal, opt-in working groups. In addition to the courses (changing duration as experience grows – now 9 weeks x 3 hours), people can see talks and workshops from *The Hologram* collective. More detailed writing can be found in Thornton's book: *The Hologram* [40]. People can request a Minimum Viable Hologram, a trial hologram experience led by a facilitator from the community. In addition, there are regular community of practice meetings. The group forming around the practice is experimenting with ways in which *The Hologram* can continue to spread not by 'scaling up' or providing a recipe or a toolkit, but by working relationally, in exchange with others who are different [6]. *The Hologram* emerged from a specific branch of the Anglo-American participatory art world, but has begun to invite groups of people to mutate the practice, such as healthcare practitioners. Although the courses are open to all, women tend to outnumber men, so a course has been run specifically to invite those who identify as men (or as masculine) to experience and to shape the project. Becoming a peer-to-peer practice means crafting and sustaining peer relations of many kinds.

## 5. MOBILIZING LIMITLESS RESOURCES?

Simply put, to have a flourishing planet requires us to address the ecologies that strive to co-exist on it, but also the actions, beliefs and energies of the dominant species that holds the future of the planet's flourishing in hand. To mobilize change for people so that people can change, we need devices that address justice, care and trauma as well as crucial work on overconsumption of finite resources. There is a need to face the challenges of transition to more sustainable 'eco-social' futures without recrimination or guilt, despite our ongoing complicity, and imagine different futures where relations feel different. Ethicist Mary Midgley considers this tension in Animals and Why they Matter:

'The accusation of hypocrisy is often quite an effective way of silencing critics and making them feel ashamed. We should resist it. During any reform, when people are beginning to notice that something is wrong, and trying to see how to alter it, some confusion and inconsistency between theory and practice is normal. It is even necessary. This is not yet hypocrisy. The kind of hypocrisy which invalidates criticism is a deliberate, chronic condition, that of somebody who has settled finally back into

accepting the status quo. The normal confused condition is uncomfortable but transient' [27:41].

*The Hologram* is deliberating courting transient, possibly uncomfortable, transitions between worlds and, in this, creating a model of a different system in which it is possible to forgive one's complicity and evade a sense of compromise for a few hours. The example of *The Hologram* is a good one because it combines an ethics of care with a structure that is designed to be both supportive and self-reproductive. There may yet be hidden down-sides to operating this scheme, but so far these are not apparent.

What the study of (and support for) *The Hologram* and other artist-led activities that are shaped to be independent of, resistant to or actively replacing the neoliberal paradigm can do is reveal what the world can support to aid in taking a more abundance-oriented approach to land, soil, lives, energies, air, waters and potential. This is not to regard any one quality as inexhaustible but to add to our design palate and choice of campaign all the energy that imagining, reflecting, trusting, connecting, caring and nurturing can offer. These relational qualities exist while humans exist (not that they are all unique to humans) and they are qualities of which we get disproportionately more when we cultivate any of them. In other words, the heart of abundance is a positive feedback loop of (effectively limitless) virtuous actions that supply something other than material sustenance.

Proposing we design wisely for alternatives to current trends is an HCI tradition, but we can also design for the failure of those alternatives, caught well in Collapse Informatics, 'the study, design, and development of sociotechnical systems in the abundant present for use in a future of scarcity. … where notions of practice—theorized as collective activity in the "here and now"—can shift to the future since collapse has yet to occur'[41:1]. Solidarity does not have to be the casualty in this context; in fact we cannot afford it to be. To sidestep from physical resource management in the face of climate breakdown may look unworldly and naïve, but it may be the precursor to any other form of radical change needed. We are looking into the system to where resistance to current political energies might be fostered. For instance, British funder Joseph Rowntree Charitable Trust is hearteningly specific about what research (not) to fund in their description of Beyond Consumerism: 'we understand the problem of consumerism to relate to the links between extracting raw materials from the earth, producing goods using these materials and using advertising to compel or persuade people to consume these. We see the solution to this as a transformation in human behaviour and the structures which shape it. We do not believe that changing patterns of consumption or encouraging people to be 'better' consumers will produce the change we need.' [12:n.p.]. As the Trust implies, significant change goes beyond resource use to a complete rethinking of relations.

## 5.1 When creative practice meets technology

*The Hologram* course does not need to be organized using video-conferencing – people could have come together in a training room (and, indeed, that has been tried). Meetings of the hologram and her triangle could, (and at other times, have) emerged as a neighborhood activity, closer to the face-to face encounters of the original Thessaloniki health clinics. Such arrangements would have a different carbon footprint, for better or worse. But there are other differences in taking up the online opportunities that the pandemic heralded.

Through our observations, we gained some evidence that the limited world of videoconferencing made it easier to share intimacies during the course (and perhaps also in performing Hologram sessions). Certainly, there were new challenges to creating group cohesion and a 'safe' environment when the first course ran in physical space. This conforms to what is known about therapeutic activities online, where some styles of computer mediation can actually benefit self-disclosure, but it is nuanced by context (e.g. [44]). Remote facilitation and the absence of many physical cues may be a strength of *The Hologram's* online design. Perhaps even more interestingly for progressing change, the use of videoconferencing means sessions can run anywhere with any participant who can agree a time-zone and has access to a computer. Rather than having to choose neighbours or require friends to take a journey, the hologram can pick people that could make exactly the right life-long triangle members, respecting their feeling about with whom to share these moments, but also – given that people often move away from home for work or love, travel, and make new friendships across the world in other ways – acting to spread the *The Hologram* model between areas.

Just as it has been argued that online dating is changing the way that people's networks operate to make them broader, with greater intersection between cultures [11], this speaks to the possibility of wider socio-technical change as a result of aggregated connections through these new practices. Triangle members grow intimate across the world in caring for a mutual hologram, building not-quite-arbitrary new relations. Triangles stay at one degree of separation from other triangles, which could make them powerful in organizing other care or solidarity activities and allowing these to spread quickly across the planet. Both have potential for changing dynamics beyond just health support for the hologram.

## 5.2 Limits, abundance and trade-offs

Ultimately, if the ethos of such initiatives can hold true with amplification and not become co-opted to neoliberal ends (and we have only to look at sharing economy tools and social media to see how fast co-option can happen), then applying digital power offers a means to extend an abundance of imagination and care through an ingenious structure to produce some of the eco-social change that we argue is needed for the solidarity that can lead to further action on the environment. So, this emphasis on abundance is not

to dismiss the merits of looking at what is finite in our worlds, but it is to travel up-stream to understand what motivation is required to care about it. However, success would come at a price: the footprint of millions using video-conferencing tools for something new must be reckoned on [16, 24]. So we end with a question about trade offs… what can the planet tolerate by way of limits if the benefit is to use the limitless potential of human abundance better? Or, put another way, how do we design more efficiently for the richness of eco-social change?

## ACKNOWLEDGMENTS

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