

A Plurality of Practices: Artistic Narratives in HCI Research

Miriam Sturdee*
Lancaster University
Lancaster, UK
m.sturdee@lancaster.ac.uk

Makayla Lewis*
Kingston University
London, UK
m.m.lewis@kingston.ac.uk

Angelika Strohmayer*
Northumbria University
Newcastle upon Tyne, UK
angelika.strohmayer@northumbria.ac.uk

Katta Spiel*
HCI Group, TU Wien
Vienna, Austria
katta.spiel@tuwien.ac.at

Konstantia Koulidou*
Sheffield Hallam University
Sheffield, UK
k.koulidou@shu.ac.uk

Sarah Fdili Alaoui*
Université Paris-Saclay
CNRS, Inria, France
sarah.fdili-alaoui@lri.fr

Josh Urban Davis*
Dartmouth College
Hanover, NH
joshurbandavis@gmail.com

*All artists/makers contributed equally to this work

ABSTRACT

The arts and Human Computer Interaction (HCI) have a lot in common. As part of computer science HCI is ground breaking, interdisciplinary and focused on the interactions that form part of our everyday world. As part of the arts, HCI is a lens on technology, showing us spaces where there is room to interact and create new and meaningful blended experiences. It is therefore no surprise that many researchers and practitioners in our field have and maintain creative practices alongside, and as part of their research. We explore how these dual practices relate to each other, and how we might reconcile our mindful creative experiences with the formality of research. What benefits does such duality

have, and can we illustrate the value of arts practice in HCI? This pictorial curates diverse artistic practice from a range of researchers, and offers reflection on the benefits and tensions in creativity and computing.

Authors Keywords

Arts practice; sketching; painting; embroidery; neural networks; dance; choreography; found objects; jewellery; illustration;

CSS Concepts

- Human-centered computing

INTRODUCTION

We are not only researchers. We are artists, makers, dancers, sculptors. We connect with people, inspire, indulge and create. We find ways of expression in parallel to our identity as researchers, and sometimes these expressions find their way into our working world. The following pages contain an individually curated exhibition of creativity and craft. We invite you into our often private worlds, invite reflection and engagement, and hope to inspire likeminded creative practices amongst those that attend our exhibitivie pictorial.

Art within the field of HCI is often founded on the premise of purposeful creation – what incremental knowledge does it add to? What user group does it help or inform? How can it be *used*? There is irony, of course, in setting our creativity to written text, thus imbueing it with that same meaning, but this is intended as a reflection of the state of our personhood, and a way of sharing something that makes us unique as researchers.

We present a narrative journey through our creative practices, page by page, starting with thoughts laid bare in the form of sketching, and culminating in the body and audience as output. Each artist takes one or two pages to showcase their pieces, and reflect upon what this practice means, and how it fits into the context of our research. We visit thought-sketching, illustration, the interplay between practice and the personal, between machine and the person, stitching together two worlds vying for attention, found objects and made objects, and the body and movement as art in research and at rest. Finally, we finish with a reflection on the process we embarked on to produce this narrative collection, and on the use of the creative arts in HCI.

Paste the appropriate copyright/license statement here. ACM now supports three different publication options:

- ACM copyright: ACM holds the copyright on the work. This is the historical approach.
- License: The author(s) retain copyright, but ACM receives an exclusive publication license.
- Open Access: The author(s) wish to pay for the work to be open access. The additional fee must be paid to ACM.

This text field is large enough to hold the appropriate release statement assuming it is single-spaced in Times New Roman 7-point font. Please do not change or modify the size of this text box.

Each submission will be assigned a DOI string to be included here.

Bending Bodies & Theories



What about Minority Bodies?

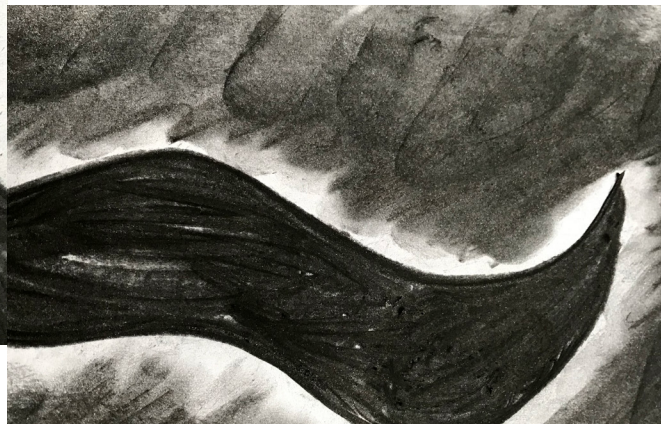
In growing up, I kept being told not to have a creative bone in my body. Hence, I keep saying, I cannot draw. But I do it to think with. And, more recently I dare to share.

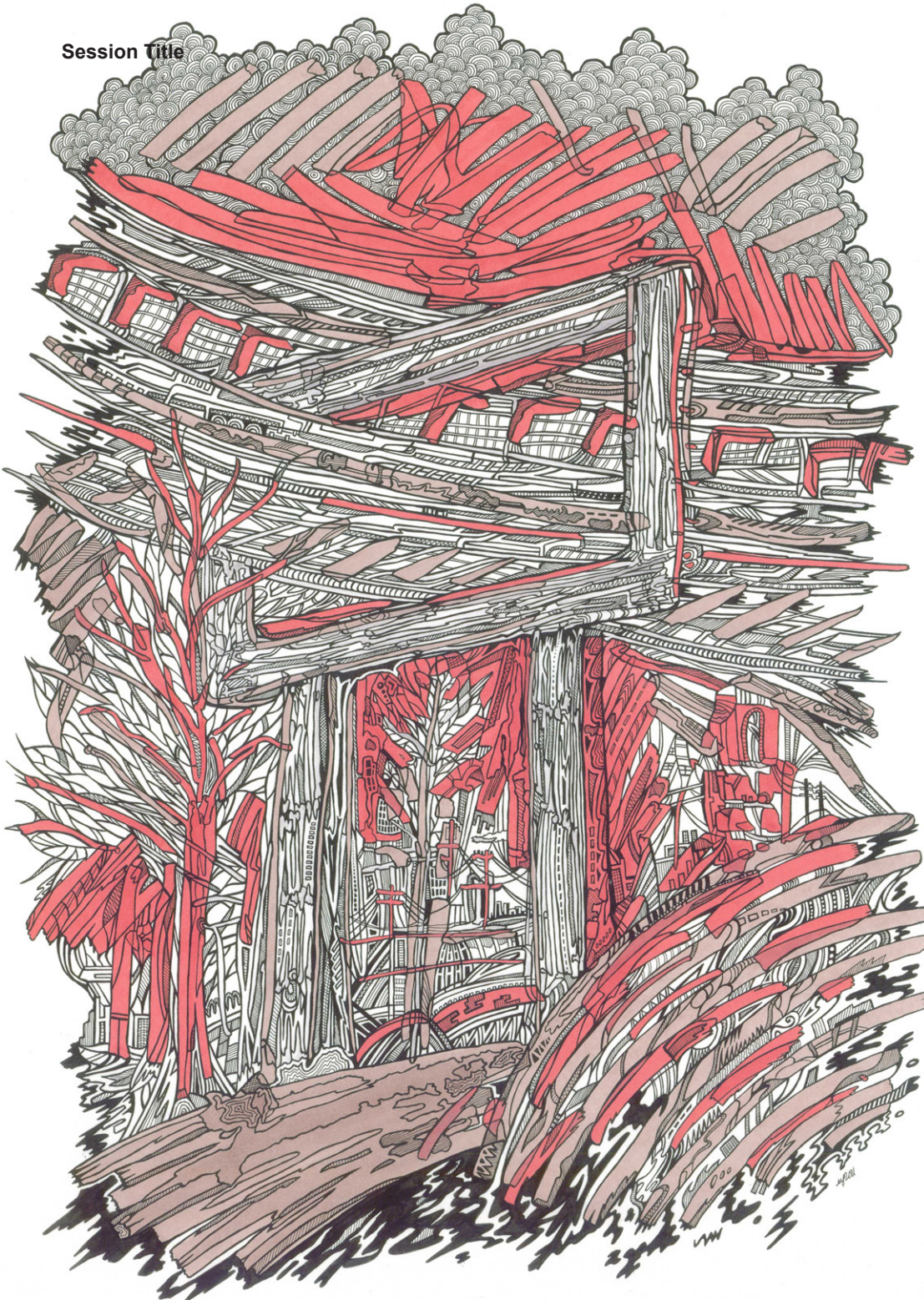
When I say, I draw to think with, I mean this quite literally. What I show here is part of a series where I explored different theories on bodies and embodiment. It started with a mess of multitudes in my brain that felt like it made my body bend (upper left) from which I then explored notions of bodily difference through the minority body (upper right; Barnes, 2016 [1]), bodies and embodiment in technological (entertainment) contexts (lower left; Spiel & Gerling, 2019 [30]; Voss, 2013 [35]) and the somatic experiences that constitute a kind of intersubjectivity within the environments we live in (lower right; Merleau-Ponty, 1962 [25]). I didn't mean to collect them in a way of a narrative initially; though in assembling this thread even, I noticed how I could further explore how these theories and approaches speak to each other, visually and theoretically. My drawings are thoughts. (KS)

And that World we're in?



What about the Context of Use?





THERE IS NOTHING LEFT

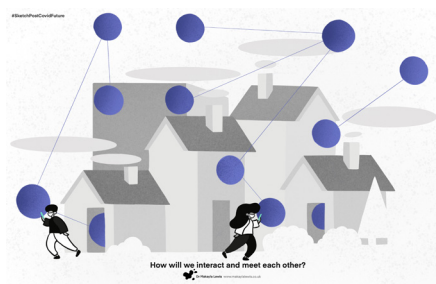
To research is creative in itself, when we write, discuss, invent and prototype we are creative thinkers. By the end of the day it takes so much that often there is nothing left to give to another task. In this manner, interweaving arts practice into one's research becomes a way of keeping the best of both worlds, and the research world benefits from the honesty that you put into it [19, 33].

Creating for the sake of art itself differs in that it is a blank canvas for the mind, without constraints and form filling and meetings. The results of this practice, whilst having some aspects in common with research images, are at the same time wholly separate, personal, and usually hidden.

Revealing images in this manner is exposing our private activities, but also giving body to the people behind our research practices.

This work focuses on the freedom of sketching or painting with colour, but is then continually overlaid with meticulous outlines, over and over until the subject is more outline than form. In this way there is both freedom and constraint, working together in balance. (MS)

“Tenderness and kindness are not signs of weakness and despair, but manifestations of strength and resolution.” – K. Gibran



TAKE A PIECE OF MY CREATIVITY

Visual doing offers a way to explore what is on the edge of the box. The creator challenges their mind to explore new directions. By placing the pen in one’s hand (e.g., A) we allow ourselves to indulge in our ideals, beliefs, and desires. The act of sharing (e.g., B and C) offers us an opportunity to showcase our experiences, self-preen one might say, however, under this facade our true aim is to converse and give courage to others to do the same. Although often this is not enough, the solution is to offer a piece of our creativity (e.g., D), we let our kin, acquaintances, and participants to tear, alter, and reform us, our creativity. This act is internally painful to witness but we soon forget, it’s part of the process, remember, we crave communication thus we are grateful to learn about their world, their story, through their hands (E). (ML)

Top Left (A): “Tenderness and kindness are not part of despair”. Digital illustration. Makayla Lewis, 2021 [23]

Top Right (E): Participant current experience comic strip. Mixed media on paper, 2014 [22]

Bottom left (B): “Sketchnote Hangout virtual visit to Museo Casa Estudio Diego Rivera y Frida Kahlo”. Pen and marker on paper, Makayla Lewis, 2020 [23, 29]

Bottom Middle (C): “How will we interact and meet each other” #SketchCOVIDfutures a probe for discussion. Digital illustration. Makayla Lewis [23], 2020 part of [26]

Bottom Right (D): “AI Tactile visual library to support participants to carry out speculative design”. Pen and marker on paper, Makayla Lewis [23], 2020 part of [27]



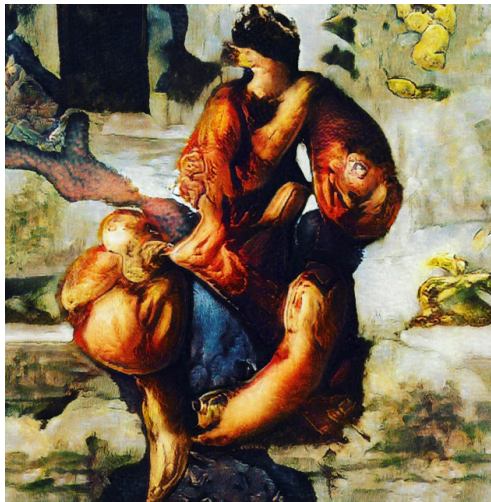
MACHINES AS COLLABORATORS

Since my creative practice incorporates machines, it allows me to observe and experience human-computer interaction within a cultural context, as opposed to the strict utilitarian confines of academic research. Generative algorithms in creative processes are appealing because of their unpredictability, as opposed to the reliability necessitated by their role as tools in traditional HCI research. Creative practice allows for posing questions and reflection on the intersection of aesthetics, culture, and technology [6]. Parsing a distinction between these realms is difficult and requires careful consideration as sometimes the machine is regarded as a creative tool, and sometimes as an active collaborator in the process. Here I will discuss two bodies of work that situate within this gradient of machine as tools and collaborators.

Tools and Architectures of Nowhere

When a piece of architecture is emptied of people, it lurches towards being ruins. These works were made during covid lockdown when our own buildings and cities had fallen quiet. Often I use machines and algorithms as an innate part of my practice [7], and during quarantine it occurred to me how vital these technologies were to communication. Our entire lives are mitigated by zeros and ones, "likes" and comment threads and endless feeds. I wanted to use these same means of communication, these tools of connection, to talk about our division. If nothing else, they made me feel less lonely and gave me a place to escape to.

The plague highlighted this dependency on our tools, since almost all social interaction, communication, and labor became mediated by our machines. Our tools and technologies became not only our means of surviving during the plague, but essential means of escaping the isolation it imposed. In this way, our machines became our principal companions in the physical world, mediating our connection to others through the virtual world. The Hideouts series serves as an aesthetic representation and active practice of exploring this tension between the physical world of viruses and the virtual world of machines, a place to hide while waiting for the world to finish ending.



Algorithms Between People Between Algorithms

Creative algorithms such as Adversarial Networks often “learn” to create images by observing and interpolating between large swathes of image created by human artists. Often, the language used by artists to describe this process explicitly engages questions of autonomy and the automation of creativity. Agency is often assigned to the machine, and the process described as “co-creative” suggesting that the machine comprises a pseudo-autonomous or fully autonomous creative entity [5]. While there is certainly an interesting dialogue to be parsed from this interest in autonomy, the shift in focus away from human contribution to the functioning system warrants closer inspection. These systems insinuate a definition of creativity that suggests the creative act is executed through interpolation between many previously existing ideas simultaneously. However, these ideas and images are previously composed by human beings, and thus the algorithm serves more as a facilitator of collaboration between these artists, identifying and generating images that are combinations of these

human artists previous images. This idea of creative human-machine collaboration is more interesting to me as it shifts focus to the human beings that create these images, as opposed to aesthetics of machine autonomy. When an artist creates with these machines, they are not collaborating with an autonomous creative entity, but collaborating with many other human artists mediated by an algorithmic system.

Bridges to HCI Research

Traditional HCI research often privileges immediate result utility as opposed to cultural reflections or aesthetic pleasure. While it may be necessary for a science to embrace these qualities to ensure reproducibility, these same qualities could stifle deviation, reflection, and innovation that produce motivating insights. My creative practice incorporating machines provides an avenue for untethered exploration on the cultural values endemic to these algorithmic aesthetics. It is this tension between privileging utility versus unrestrained exploration that distinguishes these methods from each other. (JUD)

The spiral is an attempt at controlling the chaos. It has two directions. Where do you place yourself, at the periphery or at the vortex?



interesting spirals

Quote:
Louise Bourgeois,
in *Spiral* (2019) [3]

Thoughts about my research and other aspects of academic work spin around my head as I sew. When I realised this, I started to use my embroidery practice to document my experiences of academia, of online meetings, and of my work at the theory-praxis nexus. Here, I have chosen five embroidery hoops to illustrate my thinking. These pieces relate to the mess in the collaborative and justice-oriented research projects I work on [21], and how theoretical and pragmatic issues intersect with one another.

I use my embroidery practice to reflect (and perhaps overthink) on the research process, the purpose of my work, the different layers of identity I rely on. My academic heart often feels like it is a puzzle made up of colour-changing, but matching pieces. Am I a researcher? A designer? A community artist? Where are the boundaries between personal, academic, and political interests? Where are the boundaries between my pedagogy and research practice? Or what disciplinary boundaries should I draw when engaging in diverse conversations with disparate disciplines?

These kinds of questions and pieces of my heart of course impact my research. I consistently work not only across academic disciplines, but also across academic and non-academic worlds at the intersections between social, political, and theoretical interactions between people and technologies. Often, I am asked about the involvement of my politics, my hope, my care in research projects and collaborations. While I don't have finite answers for these questions, working on my hoops and reflecting back on them has allowed me to sit with these questions, to think them through; to hold the tensions, and as Donna Haraway says: stay with the trouble [15]. (AS)



crossing paths



loose ends

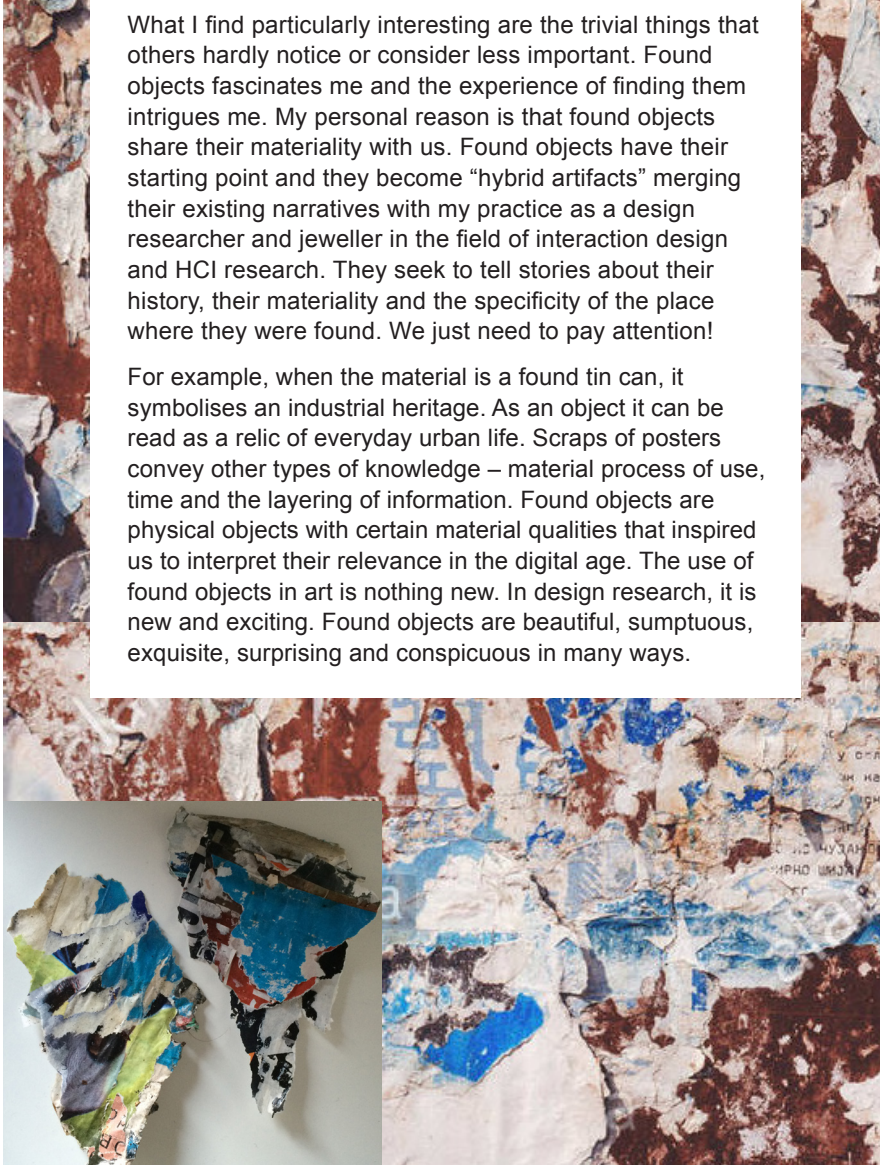


(over) thinking



puzzle heart

IN THE SEARCH OF THE FOUND: THE FINDING, THE DISCOVERY AND THE NARRATIVE



What I find particularly interesting are the trivial things that others hardly notice or consider less important. Found objects fascinates me and the experience of finding them intrigues me. My personal reason is that found objects share their materiality with us. Found objects have their starting point and they become “hybrid artifacts” merging their existing narratives with my practice as a design researcher and jeweller in the field of interaction design and HCI research. They seek to tell stories about their history, their materiality and the specificity of the place where they were found. We just need to pay attention!

For example, when the material is a found tin can, it symbolises an industrial heritage. As an object it can be read as a relic of everyday urban life. Scraps of posters convey other types of knowledge – material process of use, time and the layering of information. Found objects are physical objects with certain material qualities that inspired us to interpret their relevance in the digital age. The use of found objects in art is nothing new. In design research, it is new and exciting. Found objects are beautiful, sumptuous, exquisite, surprising and conspicuous in many ways.

Left. Scraps from old torn poster paper taken from texture on street wall made me think of the layering of data and its access over time.



Top. Stanhope Thimbles (red thimble) are objects that hide a tiny image. The black “peeps” are miniature photographic lenses, incorporated in different objects from the mid-19th century onwards and thimbles were an example of such objects. When held up to the light one can look through the lens and view the microscopic image with remarkable clarity (left).

At the same time that people inspire us to think differently on issues and concerns around our highly connected world with the aim to find ways to explore the more social values of IoT, the physical environment and our surroundings have their own ways to inspire us. During a walk near the Fablab in Berlin, I searched for things that would inspire me to think of ways that people could respond to issues of privacy and take a bit of control over their personal data online. The materials qualities of the things I found allowed me to start thinking on issues around data access and sharing to explore in physical ways issues around data access and privacy.



I grew up studying both science (mathematics and computer science) and dance. While these two interests have long been separated, it was during my PhD that I sought to connect them. From then on, dance and technology became an entangled space for research, reflection and innovation. My research creation work follows a performance-led research in the wild [2] as I create technologically mediated dance pieces that both provide an embodied experience to the participants (dancers or audience members) but also serve as an experimental ground in which I observe how they relate to their own body and to digital technologies.



The pictures in this page illustrate an example of a participatory dance piece that I co-created with Jean-Marc Matos called RCO. We choreographed a “performative situation” where the audience members respond to instructions and interactions sent to their mobile phones as well as invitations to dance from the performers. During showings of the piece, I observed how the participants took part in the creative act of dance through the interaction with their mobile phones and I reflected on these findings using concepts related to the social norms and technological constraints [10].

More generally, creating performances that use technology is a way for me to look at and reflect critically on the creative process, on technology and on people’s experience of both. Beyond a personal creative interest, my art practice is an experimental research where I imagine, develop and experiment with new and creative embodied ideas through, with or for technological interventions. (SFA)

Video available at: <https://vimeo.com/222166447>

Photographs taken by Fabien Leprieult



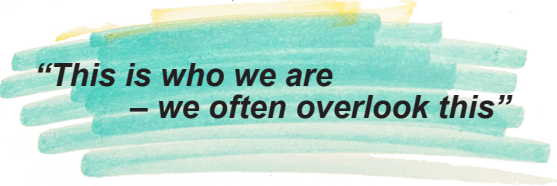
REFLECTION & OPEN QUESTIONS

We collected and curated images, stills, text, which related to our own artistic practices, and that also sometimes crossed over into our research. When we create we reflect, sometimes those reflections make it into our research. Some of our work is creation for creation's sake, or a way of thinking [17]: artworks do not have to have a purpose. That said, perhaps we might also find meaning in formalising and exposing these hidden artistic practices that are typically considered “hobbies” or “soft skills” to give them credence and credit where it is due. Motivation is key to creativity, and intrinsic motivation is a starting point - we do it because we want to [31]. This collection provides insight as to how diverse our creative practices are, and how they can sit alongside – and often merge with – research in Human Computer Interaction. Methodologically this work straddles the arts, design, interdisciplinary practice, and HCI, focusing more, or less, upon each depending on our own approaches. We are lucky in that our field supports a wide view of research outputs and practices, but there is still scope to expand on our outlook in this respect.

Researcher/Artist

There are many entry points into the arts-HCI discourse, and whilst we do not claim to be the first to examine this area, we do present to you, the audience, novelty in the form of a snapshot of our uniquely personal creative outputs. In creating this collection and reflective piece, we draw upon the influence of works such as Gaver's insights from designer's workbooks, in which we can see process and reflection alongside iterations and outputs [13]. We also look to RtD which can look “suspiciously like design practice” on the surface but can produce new and actionable knowledge via making and doing [36]. A literature search of arts within the context of HCI provides interesting conflicts, in 2003, Sengers & Csikszentmihályi stated that “*it is not uncommon for artists to revel in the nonutilitarian nature of their work*” [28], and then went on to talk about those artists who *did* embrace technology. Later, Benford et al. [2] go on to state the importance of artworks to enrich our cultural life

and society as a whole, but yet, as before, the ‘artist’ and ‘researcher’ are two separate entities, who may meet to work together but have separate interests and do not exist in the same plane. Conversely, Edmonds et al.'s view of the ‘studio as laboratory’ is a more complementary approach, recognising the similarities between those in seemingly disparate fields and that our creative spaces are “...*the ‘natural’ working environment where the artist dreams, explores, experiments and creates...*” [8]. Bowen et al.'s creative exchange demonstrates the value in bringing together the creative, researcher and participant in meaningful collaboration [4], but again there is the notion of the creative practitioner (or artist) as other, despite their dual status as researcher. Finally, Finley and Knowles perhaps best describe the approach we have taken on here in their simultaneous roles as both artist and researcher [11], discovering by chance that both experienced the duality of research and art in disparate fields: showing that one can be both, all willing.



**“This is who we are
– we often overlook this”**

Tension/Ease

Technology can support multiple paths in creating and creativity, software does this by giving people short cuts and modules and remixing options – which is more difficult to do in the physical world. Hardware does this by offering different modes of interaction across multiple tangible forms. Creativity support tools thus present a landscape of options [12], but all are ultimately mediated by the designers of the interface. There are also barriers in utilizing such tools such as accessibility, wealth, or even the mundane such as processing power, or brand. But there are no barriers to making marks on a surface, dancing within a space, or finding beauty in the mundane [24].

Some of our practices are rooted in the interface and underlying program, made real by our mastery of the machine and algorithm, but others are rooted in media that have been used for millenia, such as charcoal and graphite. Both methods offer entry points into their representative creative outputs, but can we also support different entry points to these more traditional “hands-on” practices – and could machines help to facilitate that?

There is both tension and understanding between person and machine, the barriers between what constitutes ‘art’ are becoming blurred. On one hand, where how can traditional creative practices find a home in our digital age [14, 34], and on the other, how can those works created with and by technology find acceptance amongst ones created by more traditional means [9, 16]? There are also divides between our artistic endeavours and our research, for some these are clear cut, for others it is almost impossible to draw the line between the two. For practicing artists outside of our field and others like it, in the traditional domains of the arts and humanities, the distinction needs not be made, as art IS research – in thought, process and output (though not always published [28]). Should we thus state that we have multiple research interests? But then how does that reconcile with the art we make for ourselves, and for the simple joy of creating?

Process/Person

In the course of curating and reflecting upon our work, we met several times as a group to discuss our practice and thoughts, asking why, and how we do this, and in this way delivered a series of impromptu artist's talks, provided validation and insight, and forged a collaborative pictorial process. Although all artist-researchers in this group were known to the organiser, some had serendipitously crossed paths prior to the collective forming, either through reading each other's research, social media, or via introductions in person. Whilst meeting, either in pairs or as a group, we also discovered information about each other's approaches, and sometimes about our own: “*in talking about our*

practice with each other we learned about ourselves” (when KK was asked why they were interested in found objects (page 8). In questioning JUD about their research practice, we discovered that their research focus is on accessibility tools and their arts research is quite distinct: “...*two separate lives, but I’d like them to hang out more often*”. Finally, there was a collective sense of exposure in how we are sharing our practices, we are giving our research community a glimpse into the person who made these artworks, and likewise wrote papers, hosted workshops, gave talks. As ML says in their statement – when we give this part of ourselves we are inviting you to “take a piece of our creativity”.

GROUP REFLECTION

Following completion of the pictorial, we all met to discuss the process and our thoughts about the plurality of artistry and research. The following paragraphs summarise these reflections

The notion of what makes an artist was important in our discussions, for example, some of us feel like makers, some do not feel like artists at all - even if others name us as such. For others, the primary definition of ‘researcher’ was felt to sit better. To be an artist should not be defined by background: “being an artist is larger than just going to an art school”. We related this conversation back to the cultural idea that ‘everyone is a designer’ which became popular in past years, attempting to unpick, and open up the discussion, and debated the plurality of being an artist, researcher, or both - depending on the context and output.

Making art allows us to “directly interact with culture”. The boundaries perhaps are blurred in that “if it [the artwork] is useful, or it is better understood as part of a cultural dialogue” then it may be viewed primarily as a research piece or vice versa. The histories of a type of practice can also influence its meaning - in the case of embroidery, the craft is also inextricably bound up in political histories and feminist action. It is also very much part of the arts and crafts movement - which should not be lacquered over by simply labelling it

“art”, though it also belongs there.

Where we are placed within the academy can affect our self-definition, we move between computer science and design schools, with those in the former often feeling like the odd-one-out – “this is largely outside of what they ‘count’...” – but however our work is framed, science, design, technology... it IS research. The power of artistic or other creative practices is in what we have to show for our research - often physical, tangible or recorded performance, which allows those outside our practice to connect more deeply with research than they might with a technical body of work which lies purely in the digital world. We attempt to legitimise “two voices cohabiting and nurturing each other”. How our departments each approach and understand these hybrid practices depends on their affiliation, and ability to be open to new ideas. One of us described the pictorial as a “safe space” where we could be ourselves, another stated how it was “freeing” to write about our practice without having to frame it within an HCI context. There is a vulnerability to sharing our work, and though some are more familiar and comfortable with this sharing than others, it is an opportunity to show others how this creativity and practice applies to our lives.

This pictorial has been a space to think about our work and practice, it needs not have a “why” or distinct outcome, it might be enough to question our research and surroundings, and give others the space to enjoy that same liberty. These practices are “less about getting to an outcome, but going a new way”. By coming together, we began these conversations, and intend to return to them in our process and practice. “Any artistic approach can help us sharpen our understanding of a multitude of things”.

QUESTIONS FOR THE RESEARCH COMMUNITY

As part of our discussion, we finished by asking ourselves what questions might best serve the community in opening up this dialogue even further. To that end, we ask you to consider the following:

• In what ways does the disciplinary setting you work in impact on your creative and research practice?

• How do your colleagues respond to alternative publication formats?

• What type of knowledge comes from the intersection of art practice and HCI?

• How does your artistic practice inform your research in HCI? And how does your research inform your artistic practice?

• How comfortable are you with labels such as ‘HCI researcher’ or ‘artist’? And why do you think that is?

• Where do you place yourself and your own work in relation to art, craft, HCI, or design?

CONCLUSION

We hope that this work can provide inspiration and a prompt to those who struggle to engage with both worlds. This pictorial acknowledges our hidden practices, and offers a space for mindful reflection, but also an opportunity to make more of these practices as they relate to our own wellbeing, research, and personal journeys. At this point we would like to “hand the pen over” to you, and let you start your own creative journey.

REFERENCES

- [1] Elizabeth Barnes. 2016. The minority body: A theory of disability. Oxford University Press.
- [2] Steve Benford, Chris Greenhalgh, Andy Crabtree, Martin Flintham, Brendan Walker, Joe Marshall, Boriana Koleva et al. 2013. Performance-led research in the wild. ACM Transactions on Computer-Human Interaction 20, no. 3: 1-22.
- [3] Louise Bourgeois. 2019. Spiral. Damiani.
- [4] Simon Bowen, Abigail Durrant, Bettina Nissen, John Bowers, and Peter Wright. 2016. The value of designers’ creative practice within complex collaborations. Design Studies 46: 174-198.
- [5] Josh Urban Davis, Fraser Anderson, Merten Stroetzel, Tovi Grossman, George Fitzmaurice.

- Designing Co-Creative Artificial Intelligence for Virtual Environments. 2021. In Proceedings of the ACM International Conference on Creativity and Cognition (C&C'21).
- [6] Josh Urban Davis, Johann Wentzel. Font Your Friends and Loved Ones: In Defense of Ugly Interfaces. 2021. In Proceedings of Human Factors in Computing (CHI'21). Yokohama, Japan.
- [7] Josh Urban Davis. IllumiWear: A Bendable Interactive Fiber-Optic eTextile for Audio and Visual Interactions. 2019. Proceedings of New Interfaces in Musical Expression (NIME'19). Porto Alegre, Brazil.
- [8] Ernest A. Edmonds, Alastair Weakley, Linda Candy, Mark Fell, Roger Knott, and Sandra Pauletto. 2005. The studio as laboratory: Combining creative practice and digital technology research. *International Journal of Human-Computer Studies* 63, no. 4-5: 452-481.
- [9] Ahmed Elgammal, Bingchen Liu, Mohamed Elhoseiny, and Marian Mazzone. 2017. Can: Creative adversarial networks, generating “art” by learning about styles and deviating from style norms. arXiv preprint arXiv:1706.07068.
- [10] Sarah Fdili Alaoui and Jean-Marc Matos. 2021. RCO : Investigating Social and Technological Constraints through Interactive Dance. In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems.
- [11] Susan Finley and J. Gary Knowles. 1995. Researcher as artist/artist as researcher. *Qualitative inquiry* 1, no. 1, pp. 110-142.
- [12] Jonas Frich, Lindsay MacDonald Vermeulen, Christian Remy, Michael Mose Biskjaer, and Peter Dalsgaard. 2019. Mapping the landscape of creativity support tools in HCI. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, pp. 1-18.
- [13] William Gaver. 2011. Making spaces: how design workbooks work. In Proceedings of the SIGCHI conference on human factors in computing systems, pp. 1551-1560.
- [14] Gabriela Goldschmidt. 2017. Manual sketching: Why is it still relevant?. In *The active image*, pp. 77-97. Springer, Cham.
- [15] Donna J. Haraway. 2016. *Staying with the trouble: Making kin in the Chthulucene*. Duke University Press.
- [16] Joo-Wha Hong and Nathaniel Ming Curran. 2019. Artificial Intelligence, Artists, and Art: Attitudes Toward Artwork Produced by Humans vs. Artificial Intelligence. *ACM Transactions on Multimedia Computing and Communications*. 15, 2s, 58. DOI: <https://doi.org/10.1145/3326337>
- [17] David Kirsh, 2011. Using Sketching: To Think, to recognize, to learn. *Thinking Through Drawing: Practice into Knowledge*. New York: Columbia University: 123-125
- [18] Nantia Koulidou and Robb Mitchell. 2021. Art Digital Jewellery: Practitioners’ Perspectives.” In Proceedings of the Fifteenth International Conference on Tangible, Embedded, and Embodied Interaction, pp. 1-11.
- [19] Nantia Koulidou, Jayne Wallace, Miriam Sturdee, and Abigail Durrant. Drawing on Experiences of Self: Dialogical Sketching. 2020. In Proceedings of the 2020 ACM Designing Interactive Systems Conference, pp. 255-267.
- [20] Nantia Koulidou, Jayne Wallace and Thomas Dylan. 2019. The materiality of digital jewellery from a jeweller’s perspective’. In Proceedings of the 4th Biennial Research Through Design Conference, 19-22 March 2019, Delft and Rotterdam, The Netherlands, Article 1, 1-16.
- [21] John Law. 2004. *After method: Mess in social science research*. Psychology Press.
- [22] Makayla Lewis and Lizzie Coles-Kemp. 2014. A tactile visual library to support user experience storytelling. *DS 81: Proceedings of NordDesign 2014*, Espoo, Finland. pp.386-395.
- [23] Makayla Lewis. 2021. Makayla Lewis. Available at: <https://makaylalewis.co.uk/> (Accessed: Apr 29, 2021).
- [24] Heather McKinnon. 2016. Finding Design Value in Modern Mundanity. In Proceedings of the 2016 ACM Conference on Designing Interactive Systems pp. 1059--1071. ACM.
- [25] Maurice Merleau-Ponty and Colin Smith. 1962. *Phenomenology of Perception*. Vol. 2012. London: Routledge.
- [26] Christian Nold and Makayla Lewis. 2020. ‘Sketch Post Covid Future | #SketchPostCovidFuture’, UAL Blog, Available at: <https://sketchpostcovidfuture.myblog.arts.ac.uk/> (Accessed: Apr 29, 2021).
- [27] Next Generation Services through Collaborative Design. 2020. AI Readiness Toolkit. Available at: <https://sites.google.com/brookes.ac.uk/nextgenpsf/ngs-toolkit?authuser=0> (Accessed: Apr 29, 2021).
- [28] Phoebe Sengers, and Chris Csikszentmihályi. 2003. HCI and the arts: a conflicted convergence?. In CHI’03 extended abstracts on Human factors in computing systems, pp. 876-877.
- [29] Sketchnote Hangout. 2020. Sketchnote-on-location #8 at a surprise online exhibition (free meetup). Available at: <https://www.meetup.com/sketchnote-hangout/> (Accessed: Apr 29, 2021).
- [30] Katta Spiel and Kathrin Gerling. 2019. The

Surrogate Body in Play. In Proceedings of the Annual Symposium on Computer-Human Interaction in Play, pp. 397-411.

- [31] Robert J. Sternberg, ed. 1999. Handbook of creativity. Cambridge University Press.
- [32] Susan Stewart. 1993. On longing: Narratives of the miniature, the gigantic, the souvenir, the collection. Duke University Press.
- [33] Miriam Sturdee, Samuel Mann, and Sheelagh Carpendale. 2019. Sketching Sustainability in Computing. In Proceedings of the 2019 on Creativity and Cognition, pp. 29-40.
- [34] Miriam Sturdee and Joseph Lindley. 2019. Sketching & drawing as future inquiry in HCI. In Proceedings of the Halfway to the Future Symposium 2019, pp. 1-10.
- [35] Christiane Voss. 2013. Der Leihkörper. Erkenntnis und Ästhetik der Illusion. William Fink.
- [36] John Zimmerman and Jodi Forlizzi. 2014. Research through design in HCI. In Ways of Knowing in HCI, pp. 167-189. Springer, New York, NY. DOI: https://doi.org/10.1007/978-1-4939-0378-8_8