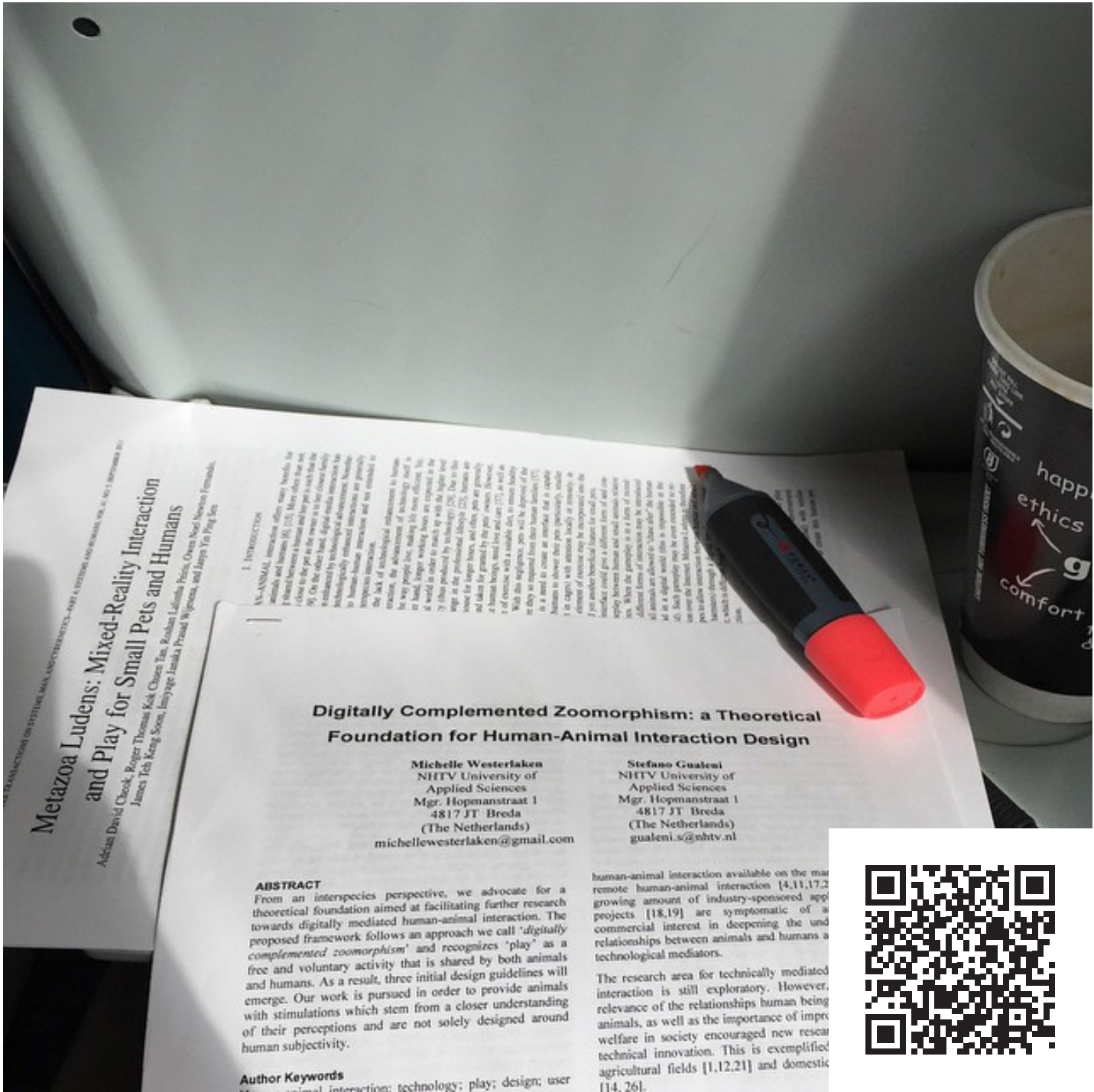# *Imagining Otherwise.*

A Reflective Diary which documents the development of the project *Equine Eyes*

This reflective journal is part of a multi-component piece of Research, and documents the crafting of the piece *Equine Eyes*. The images, and image captions have been drawn from the social media platform Instagram, and displayed alongside the dates that they were posted. These images and captions werent posted with the intent to be included in the thesis so, during the write up process they were collected, collated and displayed alongside some reflections on the development of the work. Each image is linked to the orignial post using a QR code so that any online discussions, comments or reflections can be viewed by the reader.

This document accompanies the artifact, pictorials, video summary, and augments the written exegisis with reflective and subjective accounts of making.

26/06/15

Train Office on the way to Belfast.

11/11/15

*I have been trying to write all day...
I have only achieved 691 words.
Today has been trying.*

The thesis started as an exploration of digital play in human and non-human animals; exploring how we might think about the complex social, cultural and political implications of playing with animals across cognitive, communication and physical divides. The project started in a seminar room, born from conversations with my students about 'art-games' and if we considered games designed 'for cats' to be important. We used games like Cat Fishing 2, and video examples of games available for other non-human animals to explore and discuss our feelings about these mediated experiences. After the first supervisory meetings it was clear that I needed to structure my analysis and understand the frameworks for analysis. We discussed, at length, ideas like immersive experiences for animals, and to which human animals had only limited physical access. We discussed if the cat was actually playing or if these experiences were more about power, interspecies dominance and curiosity. The goal for the beginning of the study was to explore if this would be a study linked to Design, or methods more traditionally found in HCI. This led to a lot of exploration of underpinning method, and a deep dive into ACI as a discipline. This helped to map out the design context for the study and spaces of consideration, intervention, and play; exploring ACI, but also Researchers who tried to make considered nudges to the emerging discipline.
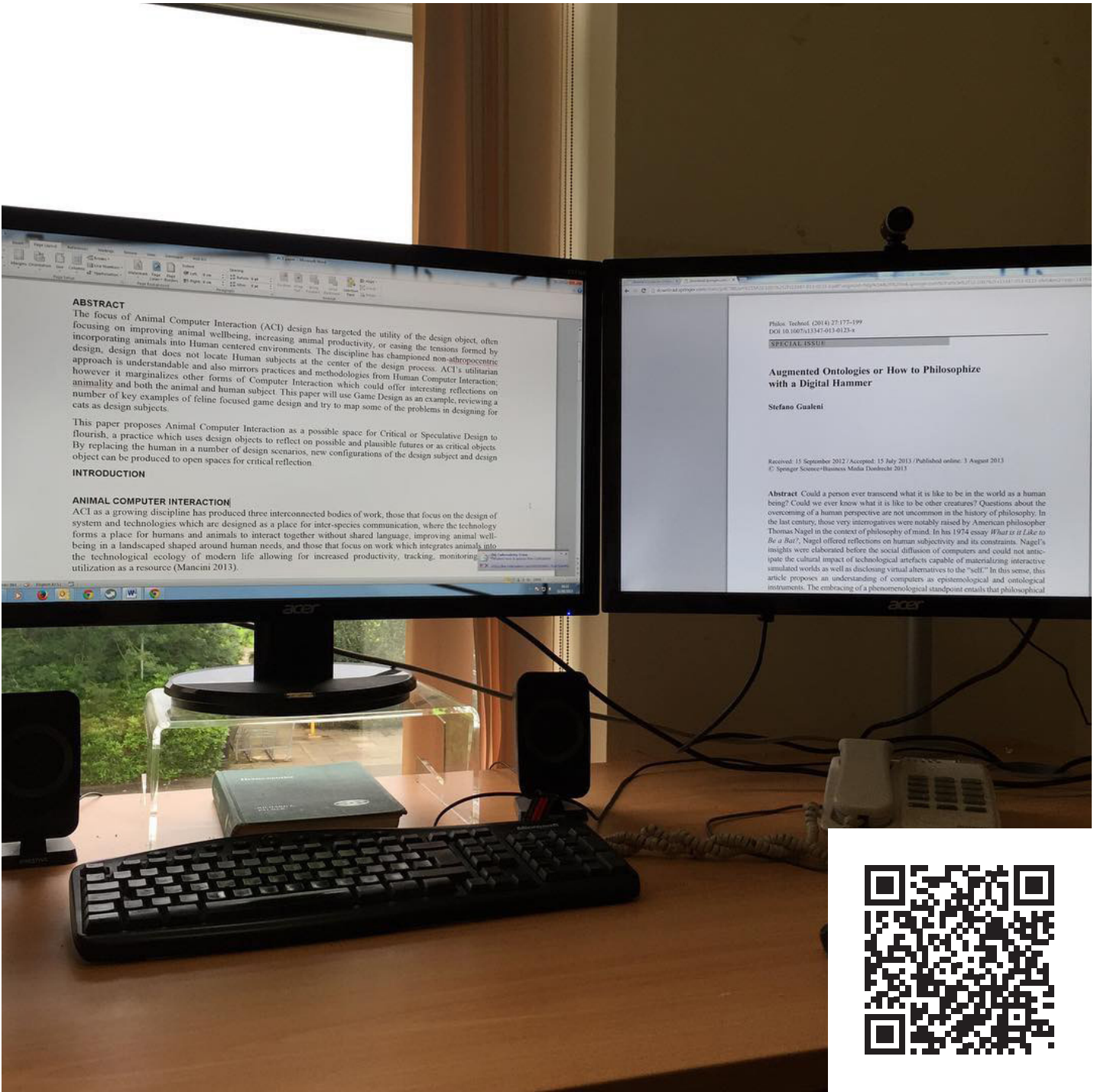
To start to map out the disciplines and orientate myself, I tried to write. I used the tools I had from Media and Cultural Studies to start a textual analysis of 'Games for Cats' for a new journal on Human-Animal relations. The article was... not very good, not very well received, but the first piece of solo writing I had done for a while, and stretched me in ways that I hadn't anticipated. The exercise was good. The paper was never published, but through the processes of writing – and a good schooling from Reviewer 2 – I started to get a foothold and to think about what the study could and should be.

I'd soon learn that 691 words in a day was actually really good, and that when i did manage 600 words, I'd end up polishing them down to 300 words the next day anyway.
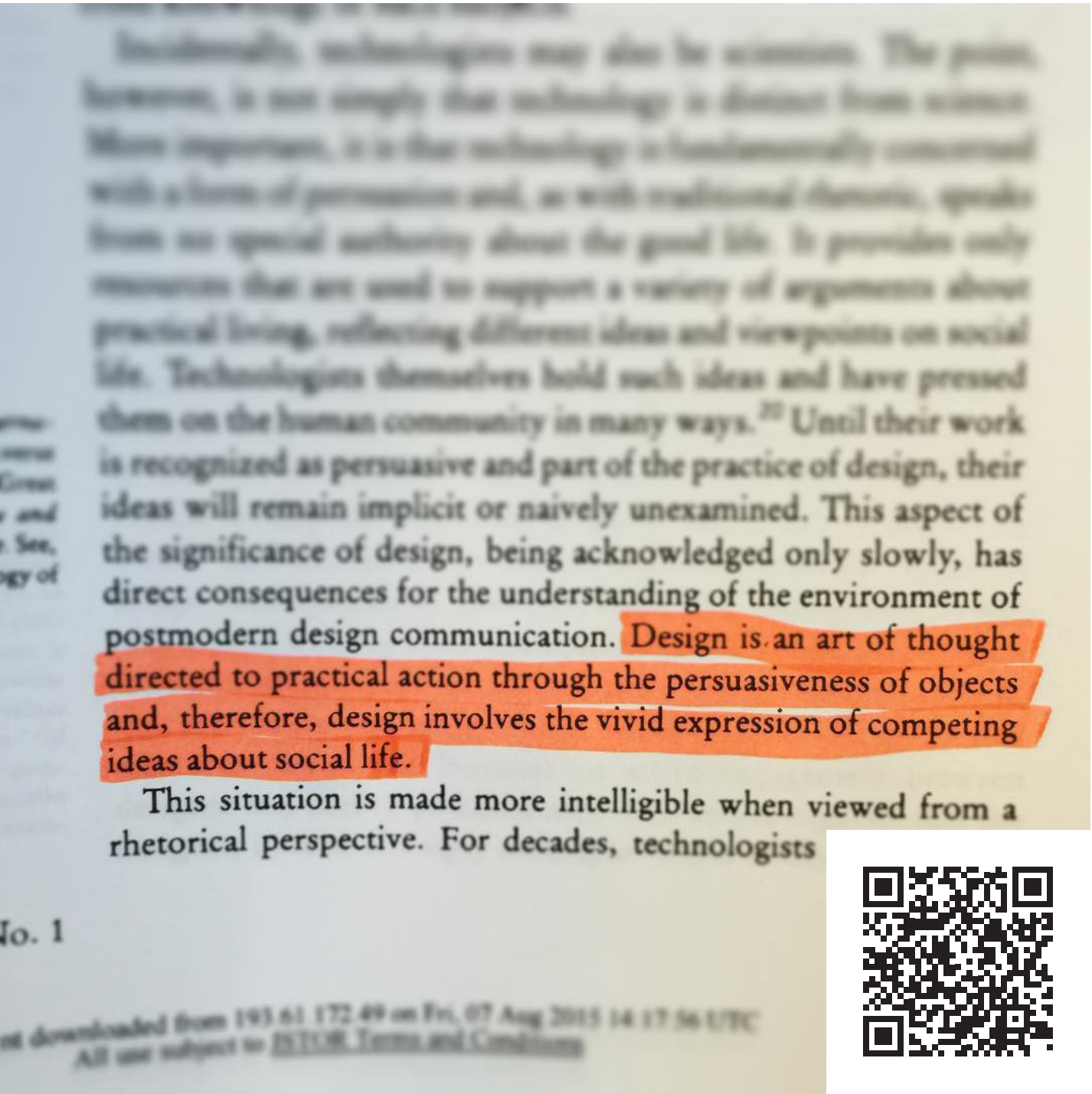
Getting there...
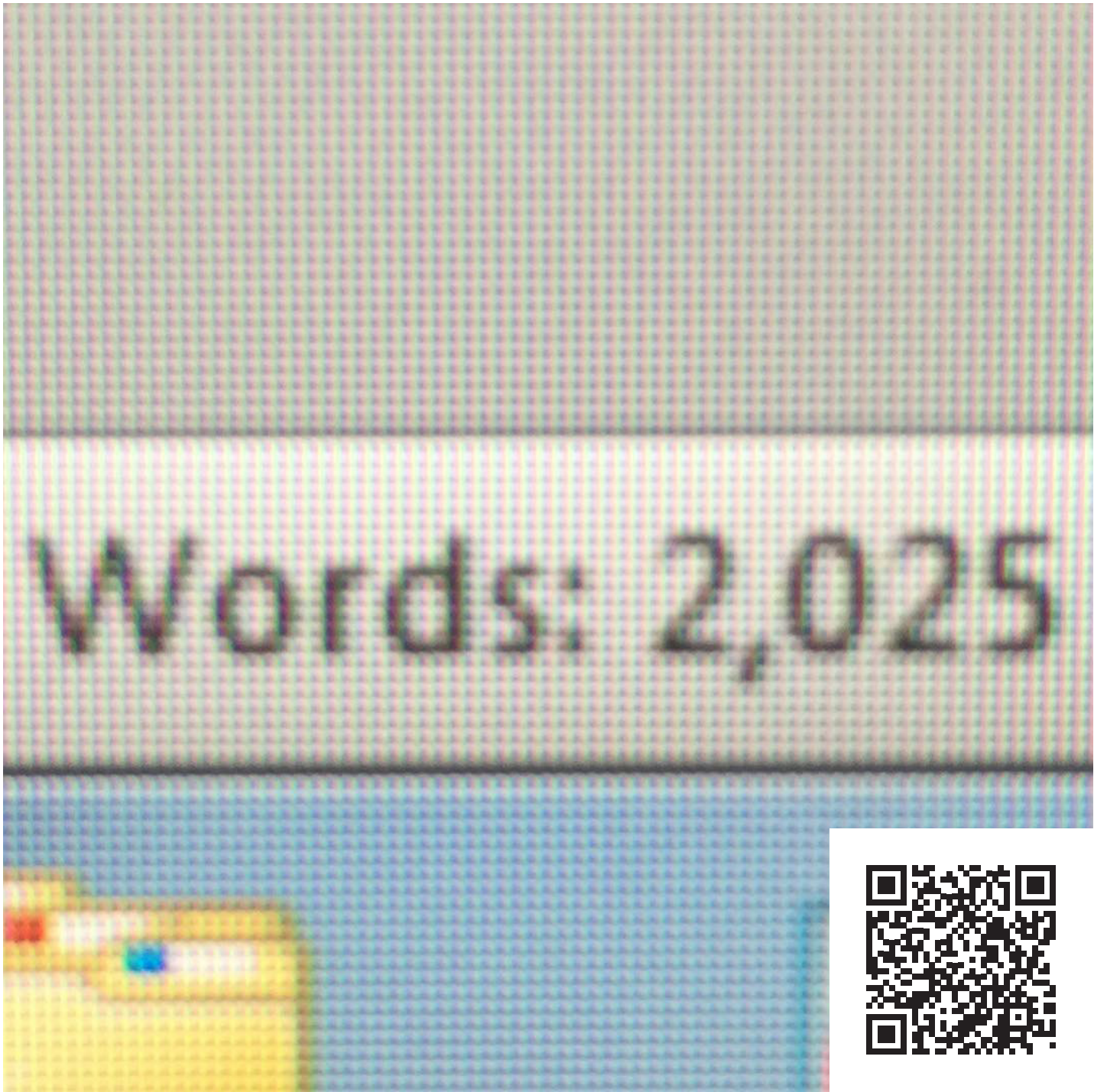
Writing has always been a struggle, and chopping away at 2000 words in two weeks felt like a massive achievement. Posting my progress and working in the open has always helped me progress and focus. Some days, and these were few and far between. It felt braggy and boastful because I know that a lot of my colleagues and peers would love the space to write and aren't afforded it.

Writing has never really been pleasurable for me, but helps me structure my thinking and make connections.

"Design is an art of thought directed to practical action through the persuasiveness of objects and, therefore, design involves the vivid expression of competing ideas about social life" (Buchanan 1985 p7)

While mapping out what became my design context for the thesis, it was also important to build my understanding of the core texts which would go on to inform my method and process. Coming from a discipline concerned with rhetoric, analysis, and form, Buchanan's work was impactful in helping to ground the study, and to build productive spaces for analysis and considered interventions..

I work a lot with Rhetoric in my teaching, so this paper and Buchanan's work really connects well with wider professional dialogues for me.

Rónán playing iPad games that are designed for cats.

Installing some new 170 degree FOV lenses on PS Eye camera today for a hardware hack I'm working on.

I don't live with a cat, and have never really been fond of them. I don't think I have ever seen a cat play Cat Fishing firsthand, but my son Ronan always really enjoyed playing it as a toddler. When we took him to restaurants he would play away on his iPad. Parents like to share what their kids are playing on playdates. There's something a little competitive about it which always feels really uncomfortable to me.
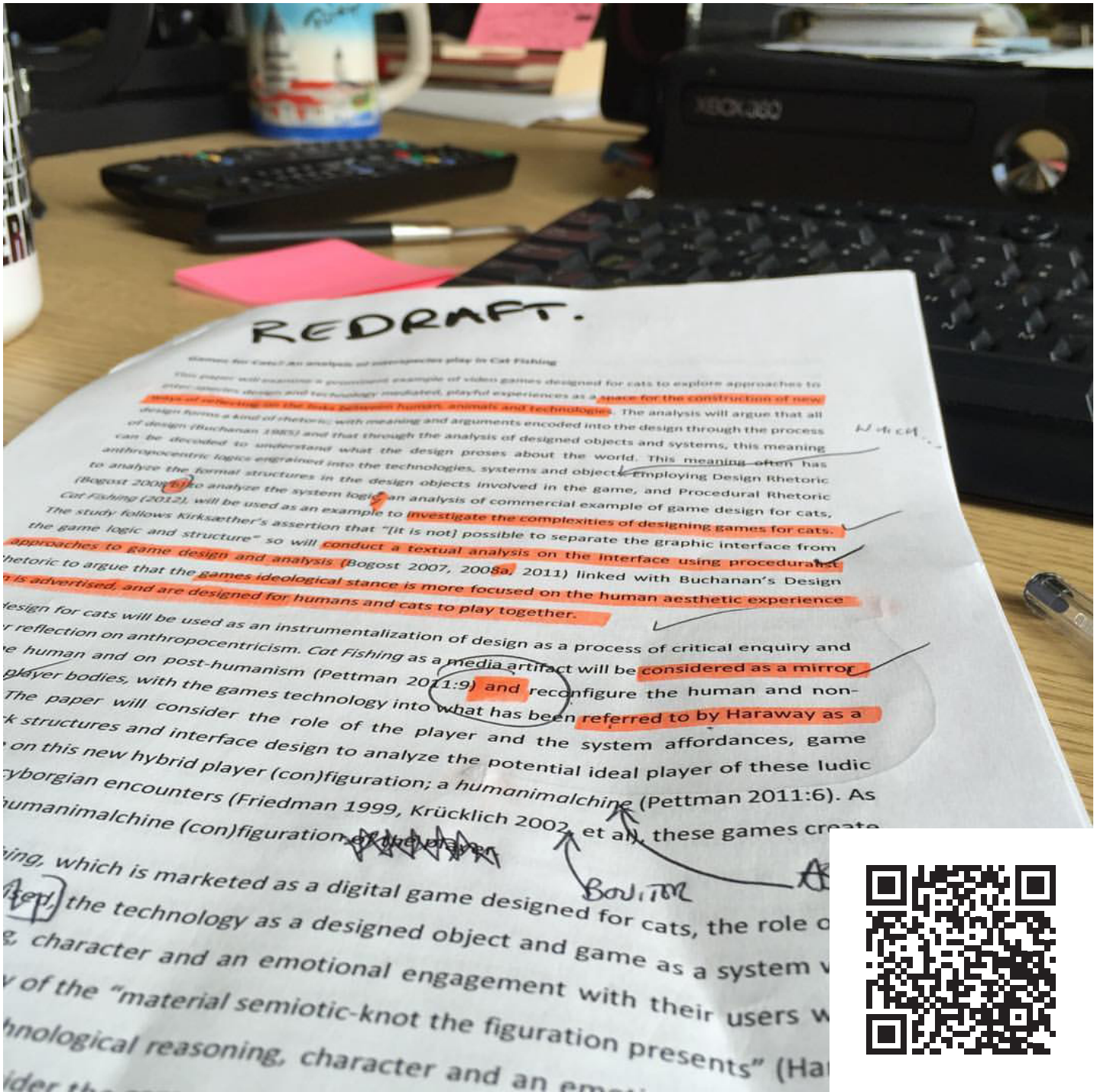
It always amused me when other parents asked for recommendations and I had to explain. At this point Ronan also liked to interact with the touch screen in unconventional ways, licking it using their feet or face which always tickled me when I read ACI researchers' work about allowing nonhuman animals to interact with technology on their own terms.
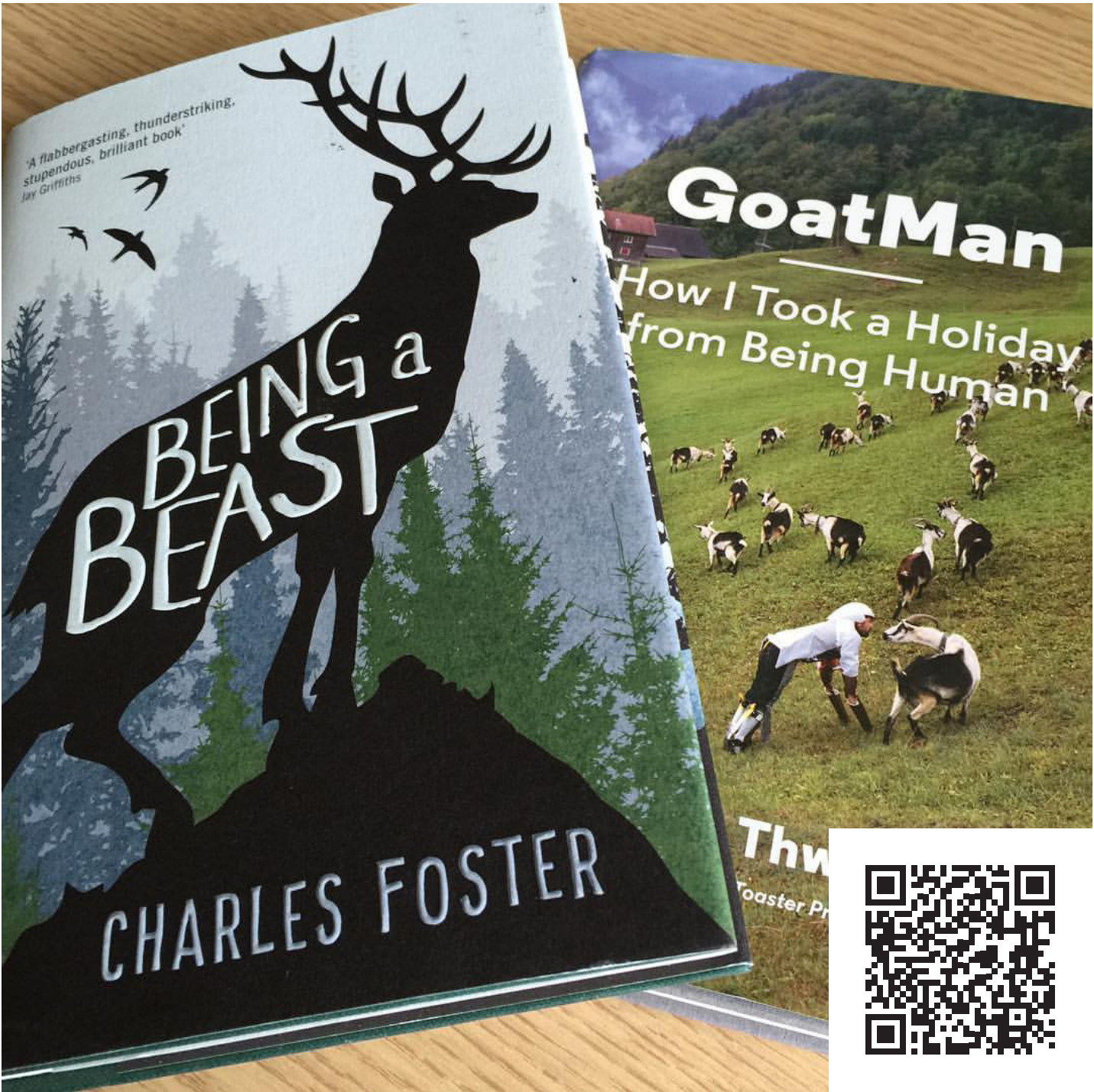
The first experiments which led to the Equine Eyes project started here, trying to hack together some PlayStation USB cameras. I used tutorials that were developed for EyeBeam. They had hacked together cameras to create eye trackers for a graffiti artist with a disability. It offered eye tacking and control which felt like it might be useful to start to mediate the experiences of other animals. The project never worked, and I think it is still in my office drawer. It started me making and tinkering, through, reading academic work and mulling it over while I hacked together different pieces of technology and played with what I might build.

7

7

Drafting-Redrafting-Drafting-Redrafting-Drafting-Redrafting-Drafting-Redrafting

New book day! Excited about some non-academic reading about experiencing being other species.

The 'Cat Fishing' article rejection was tough, but necessary. I now know what I was trying to map out, but I didn't at the time. I had just picked up Haraway's work again, starting where I left – with the cyborg manifesto – and tried to think about the game as a space for assemblage, a space which I'd now call a place for starting to 'become with' the cat, through the technology. It was all very muddled and poorly worked. The writing got the ball rolling on the study, though, and pushed me towards some of the newer work from posthumanist discourse.

Throughout the study I have tried to read broadly, and some of it has been… unuseful… but Thwaits' work really grabbed my imagination. I didn't start reading it for a good while after this, but mapping the journey of making, linking the making back to your life, working as a designer to unknot tricky knots, and giving yourself to your work always struck me as worthwhile.

One day in the car with my wife Rachael and my kids Meabh and Ronan, they asked me what the perfect or ideal outcome for the horse's head would be. I replied with something along the lines of "well, I'd probably wear it for 10 days straight, in a field with other horses. Something like the upside down goggles experiment." They asked what I'd wear for these 10 days apart from the headset. I replied "either naked or with overalls on". I loved Thwaits' commitment to process, his dedication to discovery.

Inter-species empathy through Design talk at Stanford University.

I first started to craft the Equine Eyes project as a response to a call for the Science Gallery in Dublin. Having some outside pressure on the process helps me focus my work and aim towards more immediate goals. The call also offered some development funding to refine and exhibit the work – access to resources for making and the tools to craft physical work has been a struggle throughout the thesis, and the work at this time did not sit well inside my department. I had pitched the ideas for the thesis in a Research away-day and the other Researchers in my unit laughed and mocked the idea, so institutional funding from my employer was off the table, and I was studying remotely so didn't have access to the tools and expertise I would need for fabrication.

As part of the submission, I had to create a pitch video to accompany the call. The video was of the early, unworking prototypes, and at this point I really didn't know how I would build and make a headset. The headset was a prop at this point, some old web cams stuck on a DK Oculus headset. Early work with the EyeBeam tutorials was unsuccessful. I had travelled to Stanford University to present some research on worldbuilding and blended reality fiction; a book chapter on This Is Not A Game as an aesthetic encounter in Alternate Reality Games (ARGs). A piece of writing I'd completed a few years earlier and it had taken a long while for the book to be released. In the break before my paper the organiser and I chatted about the project and he asked if I was excited to present. I explained that I'd largely given up on ARGs, and I was working on some new projects. He asked me if I could present some of it as fresh new work. I grabbed some screen grabs from the Science Gallery video and took to stage.

Photos from my inter-species design presentation at Stanford's #playingwithreality symposia

The paper was well-received and there was a range of Researchers present who were making interesting work which intersected with the project. The paper before mine was a Researcher from Stanford who was making games that you played with microscopic life using digital microscopes. The Q&A was full of interesting questions about life, play, immersion, embodiment and how new digital, mediated experiences could give us new experiences and framings of the world.

I also had the pleasure of hanging out with Greg Niemeyer (one of the edited collections authors) and Jeff Watson, whose work I had always admired, and who unfortunately died a few years later.

Méabh attempting her own take on inter-species empathy this morning with the horse out back in her PJs

This is one of the pictures I always come back to in the thesis. This is my daughter Meabh. I had chatted to her about what I wanted to build and why, and one morning after breakfast I found her in our small back garden. She had a unicorn hat that we'd bought for her fancy dress box and she was trying to coax the horse from the field over to chat to it. We'd obviously talked a lot about the horse in the past, and she and Ronan had asked a lot of interesting questions – outlined in the written body of the thesis – but this was the first time she'd tried to communicate directly with it.

Last night I helped a horse give birth, it was neither magical, nor enchanting... it was gross and smelt like blood and shit.

I have told this story in the past, and I always remembered waking in the night with jet lag from being in Stanford, but it was actually a month later. In the night, there was a horrible noise outside. In my PJs and with my phone torch, I went to investigate. The horse in the back field was giving birth. She was laid on her side, screaming and panting. After the foal was born, I went back into the house and sat quietly until the rest of the house woke up. I have only been at three births in my life. My two children, and this foal. It was messy, visceral and overwhelming, nothing like the long protracted labour for my daughter or my son's water birth.
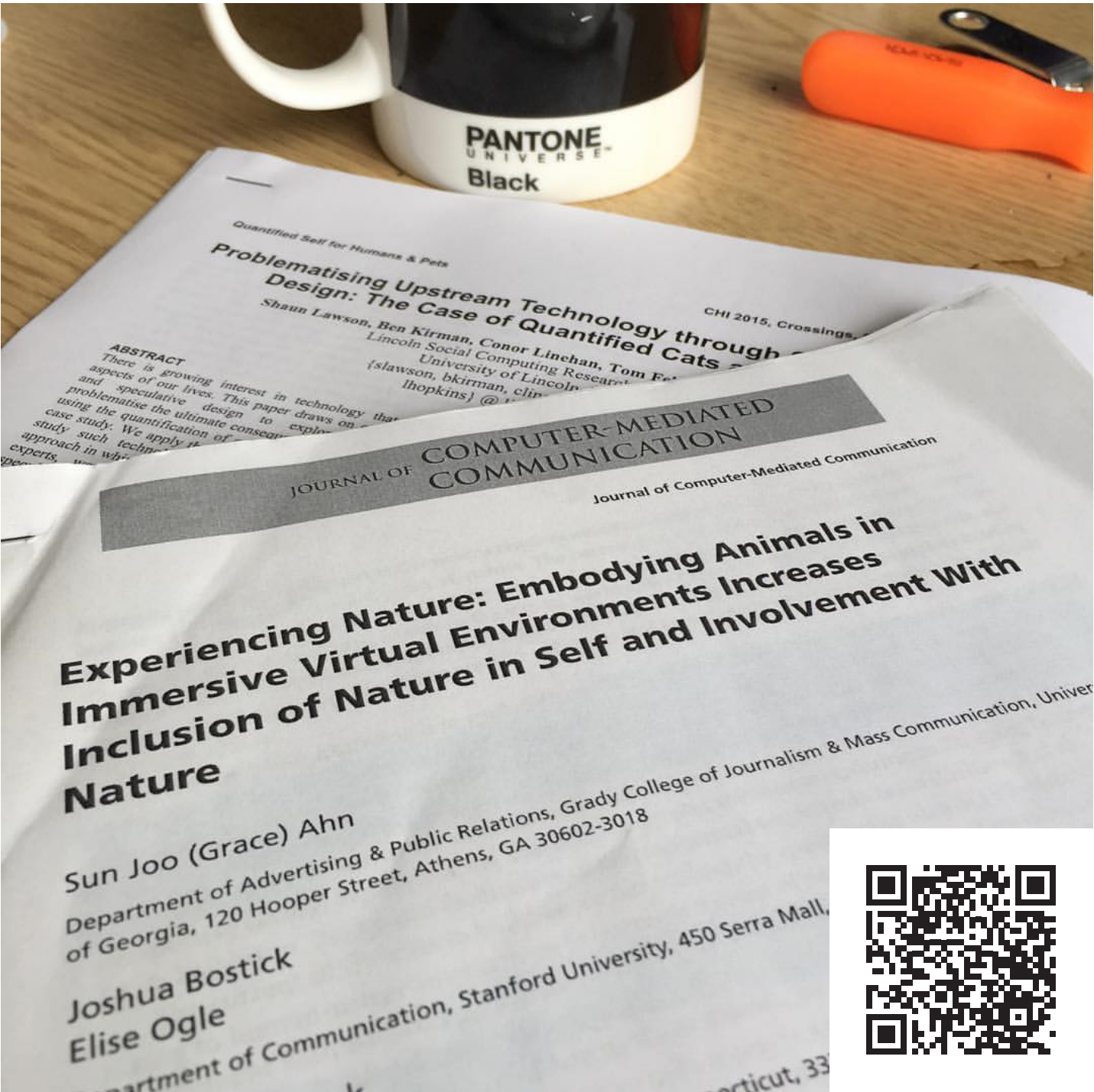
The picture is really low quality becasue I used the digital zoom on my iphone to take it.
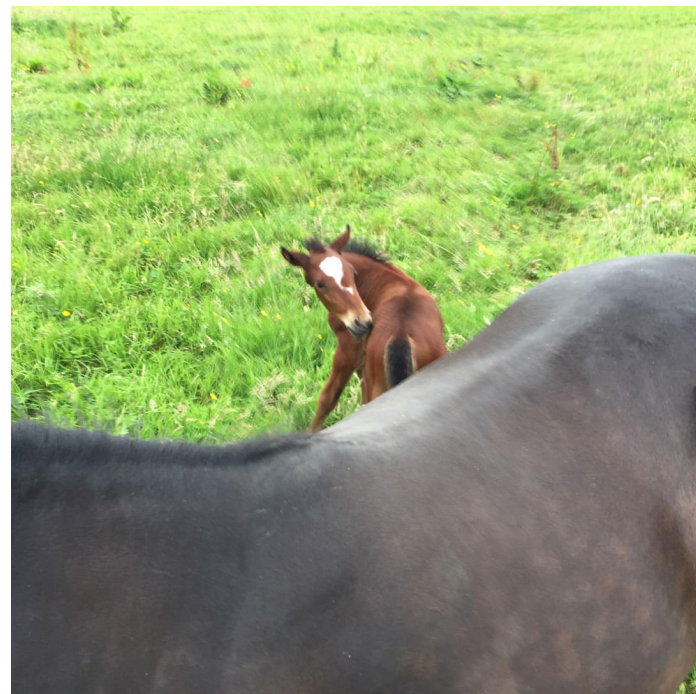
26/06/17

Captain 'merica Horse and her baby Sparkles are doing well

It took some time for the horses to settle, and my children named them, fed them and looked after them. They weren't in the field or our lives for long after this but it will always be a really important event in my life.

I started to collate Research together. Balancing a full-time role in the University and a part-time PhD has always been tricky, but I worked a lot on disciplining my process (ironic given the study's resistance of disciplining knowledge). I would block out sections of my day. Reading an article a day between 4-5pm before I picked up my kids and started the parental 'second shift', I highlighted sections that grabbed me. Then that evening between everything else, I would mull over what I'd read, semi-forgetting most of it. The next morning before teaching started, I would write a post in the Research Journal. I would try and summarise from memory what I thought the paper, and then type out all of the quotes by hand to help me reflect on them. Then at the end I would put links from the bibliography of any Research papers that had come up that I hadn't yet read as 'future trajectories'. At this point I had

considered the PhD as a series of low fidelity prototypes to help inter-species thinking, a type of inter-species philosophy through making.

The work was laborious, and I find reading a real uphill struggle because of my dyslexia, but I was building a back catalogue to draw from, a database of Research to help structure and connect my thinking. There's loads of packages that do this for you now, but I enjoyed the fact it was public, and networked together. The pattern and the process helped.
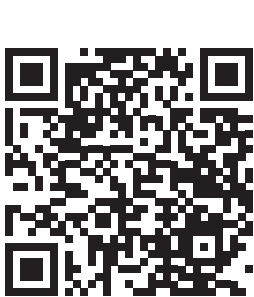
This was the first prototype using the low res cameras. I used a series of tutorials in Unity to start to piece together some live feeds. All I had managed to do at this point was take a tutorial on video textures for integrating webcams into games, and combine it with a simple tutorial for a VR headset. So there were two live camera feeds, side by side, applied to two video textures, on two plane polygons, stuck onto the two viewports of the VR headset. I was one of the first things I had build in Unity that wasn't a 2D game for the module I was teaching on Serious Games and Procedural Rhetoric.

This was still the basis for the headset for the next two years, past the upgrade viva, and a lot of the user testing.

27/07/17

Meanwhile in Coleraine

It was really useful to play with low-fidelity prototyping at the early stages of the project. At this stage, I hadn't really planned what the device would look like, because I still didn't know how it would work, or if it would be worthwhile investing time into.

Trying to line up a selfie, while looking through a 480 camera feed with one eye closed, was difficult and interesting.
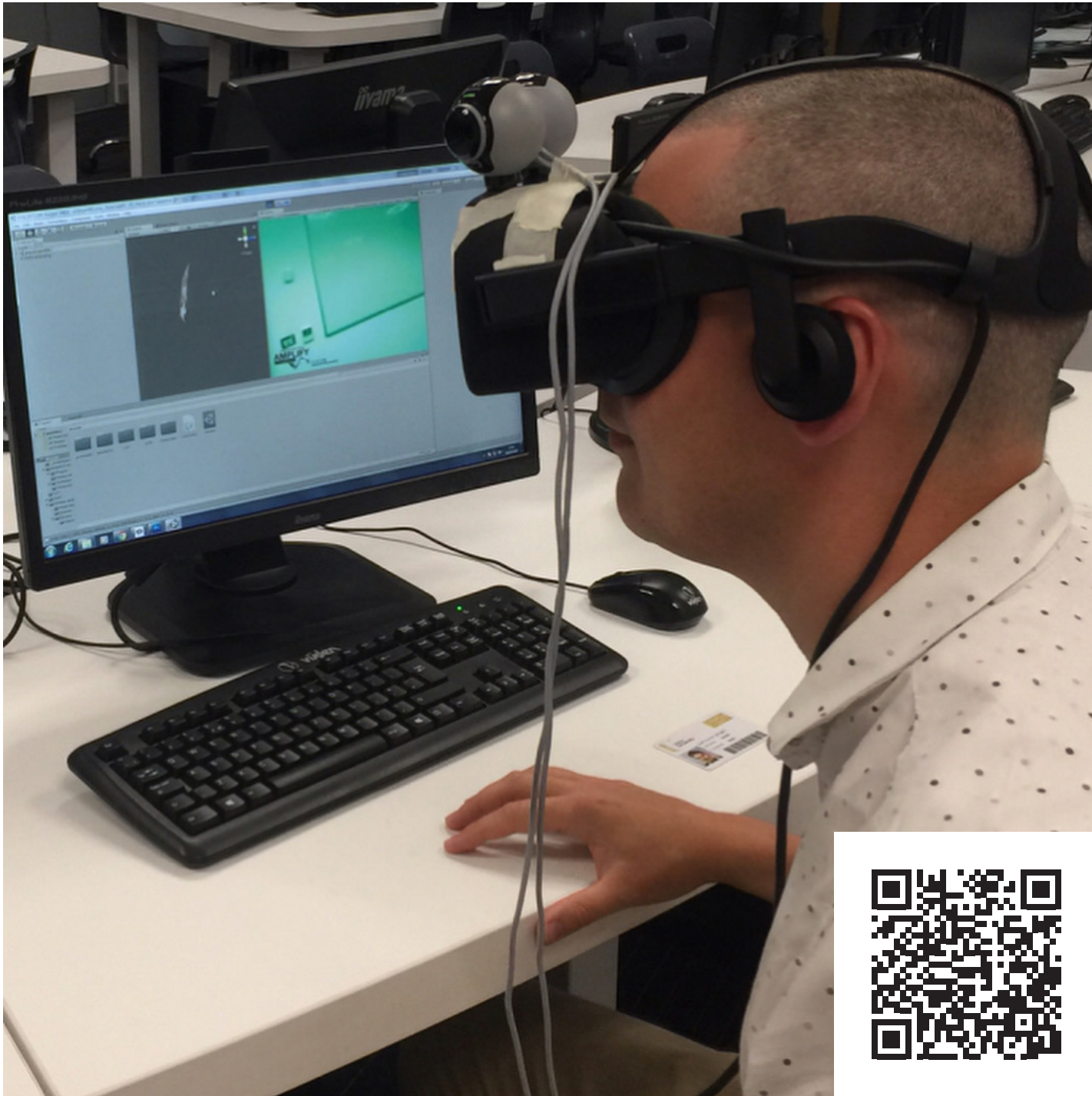
My first testers, Meabh and Ronan. I took them to the lab to show them what I'd' been building. I had worked with LUTs to shift the colour gradients and chroma during the day, and this was the first time anyone – including myself – had tested it to see what it might be like to 'see like a horse'. The chroma range wasnt 'right' yet, but in principle, I had a working first stage prototype.

28/07/17

New prototype up and running with some user testing in the labs. Almost full horse vision, just need to expanded FoV which is arriving on Monday for 350 vision
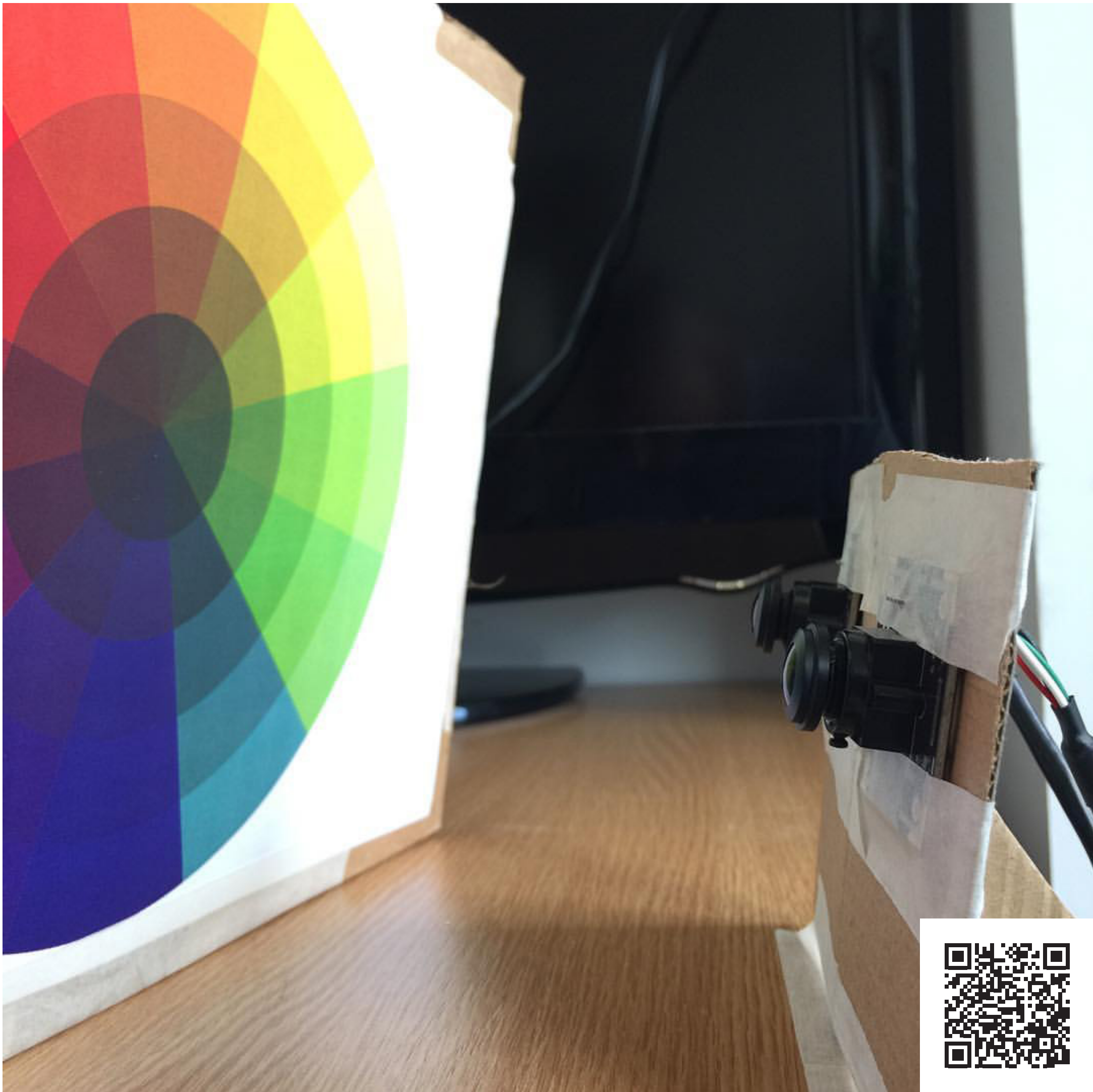
31/07/17

*Testing... how do you make webcams
not see blue.*

There were limits to what I could access in terms of FoV of the cameras
and what I was trying to simulate. Most commercial USB webcams have
a set field and dynamic focus. I managed to find some webcams from
maker sites which had a manual focus by adjusting the screw lens, and
an adjustable FoV by replacing the lens. There was something interesting
around the limits of what could be purchased easily, and the design
spec – what there was market demand for, and specialist needs – which
drove me towards maker cultures.

These cameras were fed into the laptop, as video textures, and a LUT
applied to shift the colour space. Again there were proprietary logics
baked into the technology which meant hacking together the headset
was difficult and always limited by market availability. I used colour
wheels to help in the testing and refinement of the process until pure
#FF0000 showed as red, and all other values were dispersed across the
colour palette.
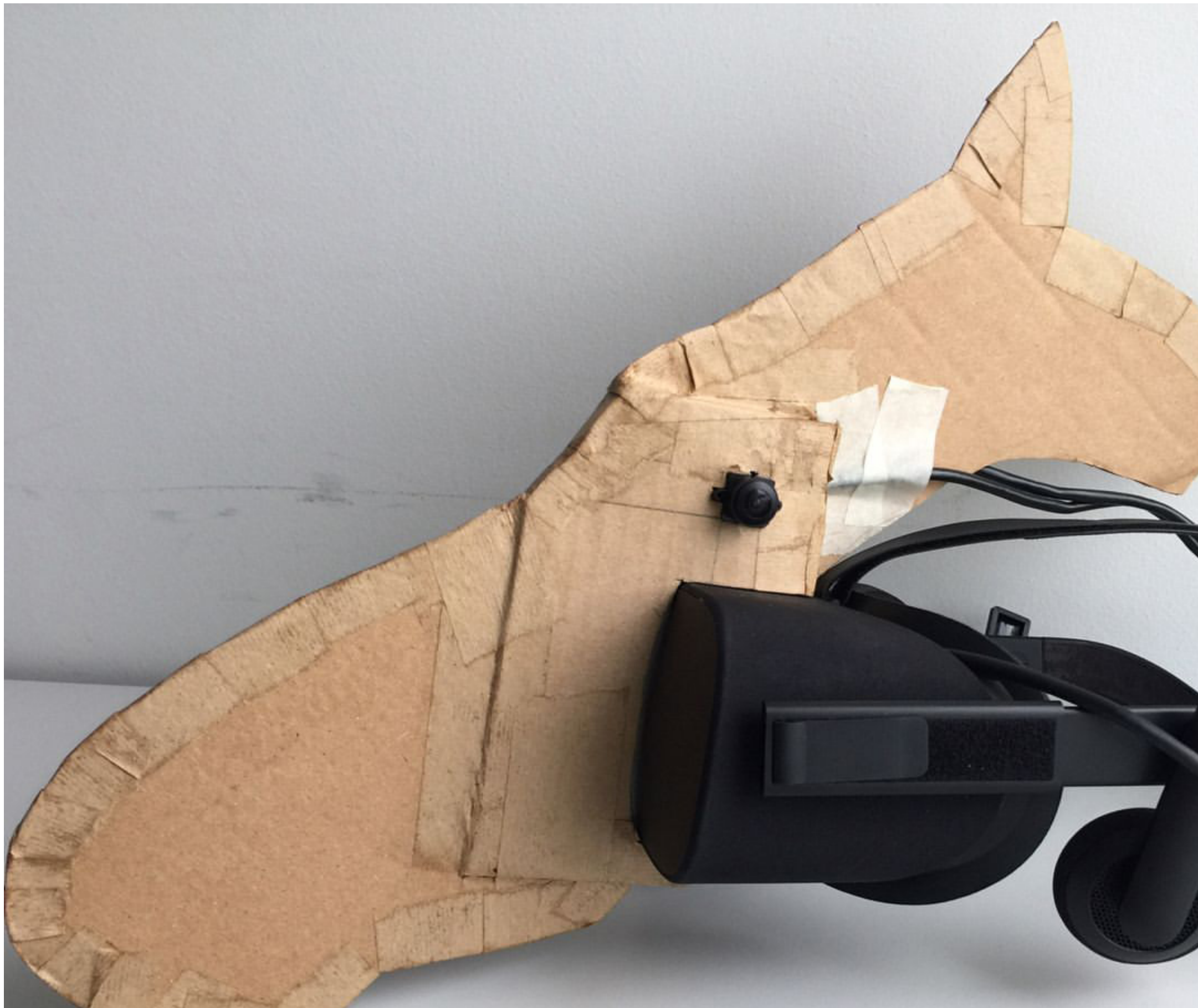
01/11/17

*Prototyping all day again*

Using anatomical drawings of horses, I built a simple horse shape which connected to the front of the Oculus headset, with angled card mounts for the new cameras. Building in card allowed me to adjust the lenses and overlap so that the project matched research from scientific journals and existing representations of horse vision found through desk based research.

16/08/11

new workstation klaxon

01/09/17

F U NAGEL
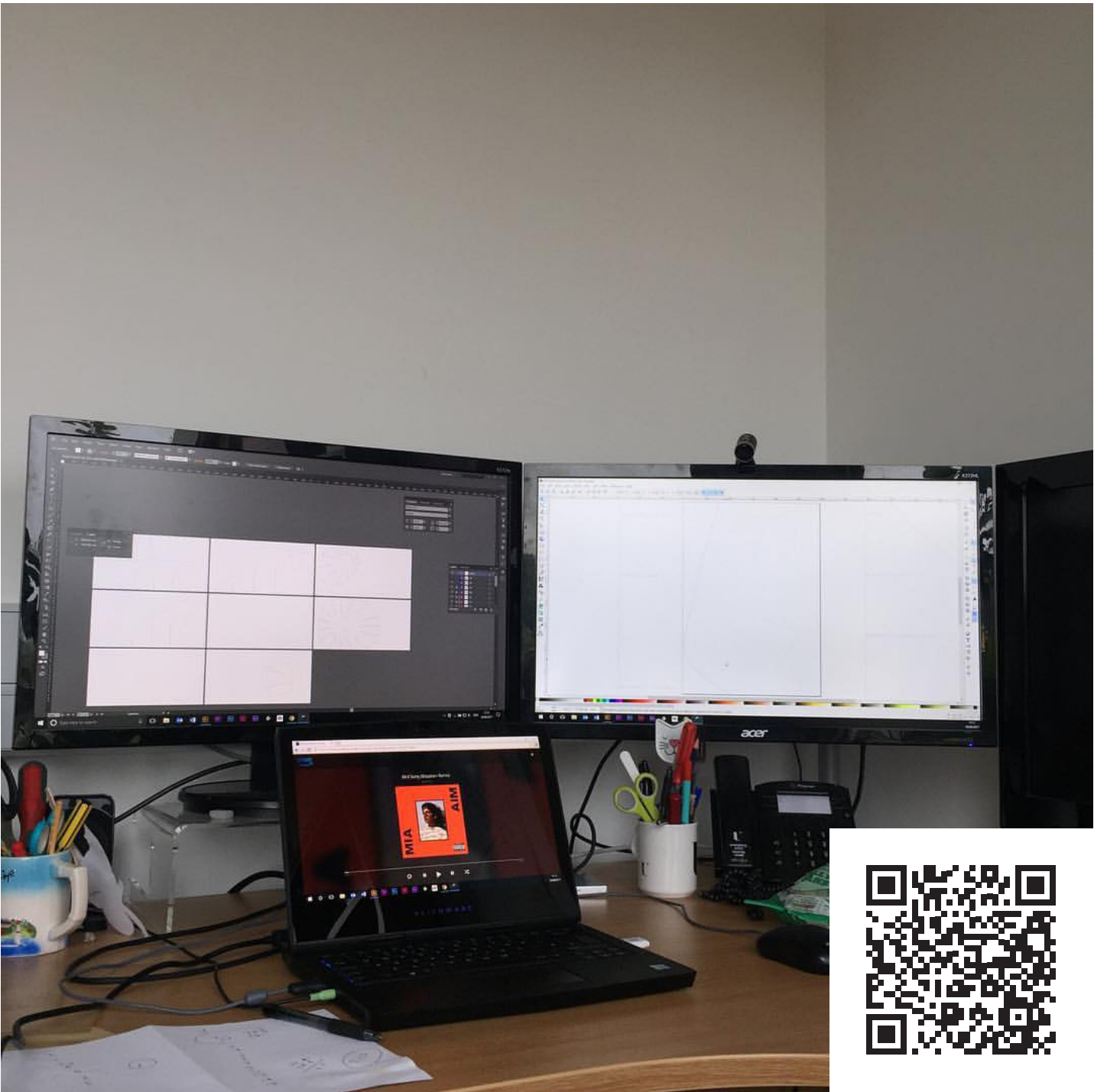
I started to build a slotted framework for the headset, piecing together the sections in Adobe Illustrator. This would later become the plywood head. I laser cut the pieces using the equipment at local high school.
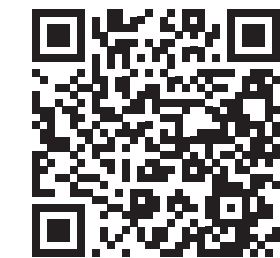
The same week I presented some of my Research locally, and an audience member challenged me with Nagel's phenomenological essay around inter-species understanding. In this same week, I found a 'bat hat' in Ikea. I love the essay, and for a while it was a central narrative in the thesis until I had a working headset which I could sit with and imagine. I realised that the work wasn't about 'simulations' and 'verisimilitude', that there were more important ways to propagate interspecies understandings.

11/10/17

Prototyping in the workshop this afternoon with @lyttlebirdfly7 now have a rough sketch to translate back into AutoCAD.
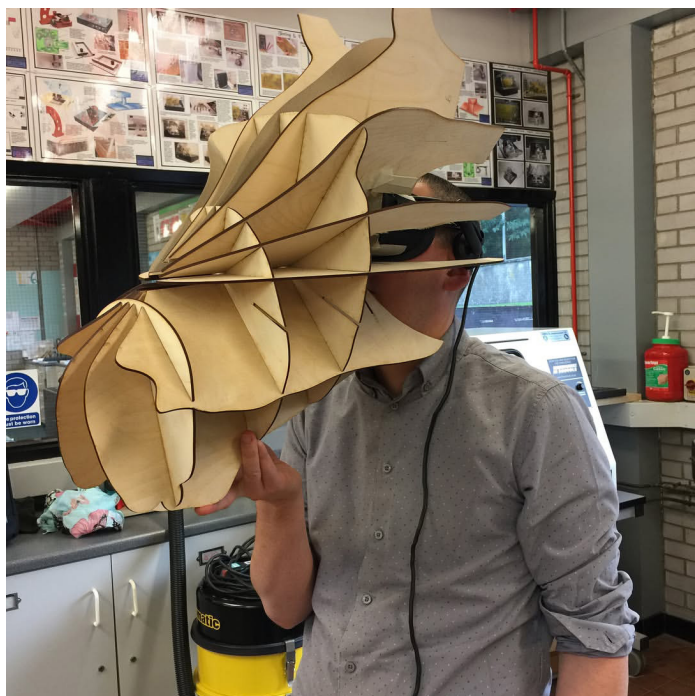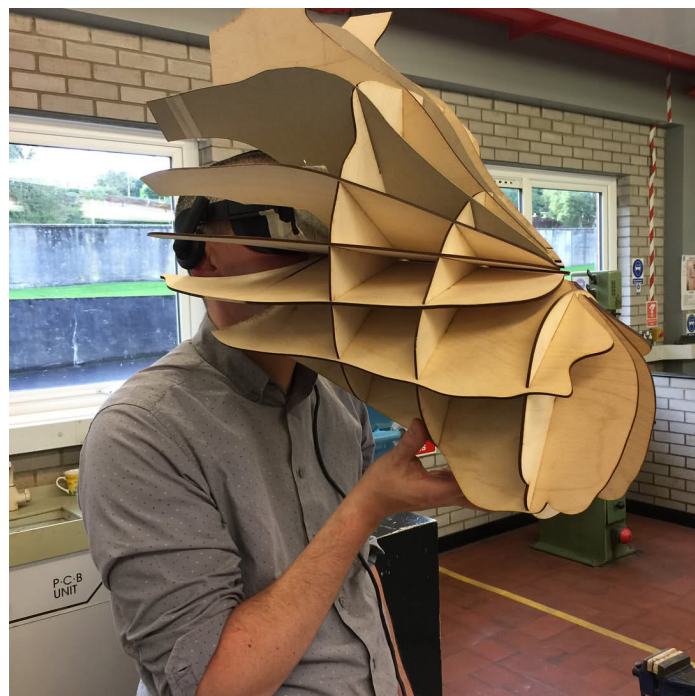
I worked with a friend, Lynda Somerville (@lyttlebirdfly7) whois Head of Design and Technology at a local school. We played with a number of different materials to balance weight, strength and rigidity for the slotted headset, playing with the measurements to try and match the scale of horse/human. It felt important, through testing, that the human head was completely enveloped and obscured by the mask.

12/04/18

I'm Britney bitch.

Through my work with transmedia and blended reality experiences, I was contacted to give a TEDx talk in a very small town called Ballybofey, on the border between Northern Ireland and the Republic of Ireland. While small, Ballybofey is surrounded by a strong local arts and agricultural community. The theme for the event was 'beyond borders' and I was invited to talk about games like [in]visible belfast which are participatory, playful narratives. I asked if I could present something drawn on my new work, and discuss the borders between human and nonhuman.

The presentation was a little naive compared to my thinking around interspecies kinship at the end of the project, but the platform was useful in that it gathered attention to the work and the project more broadly. This talk unlocked a lot of other opportunities for the project, and connections to other makers.

This picture was taken in the toilets before I went on stage because you aren't allowed to photograph the event - but I love any talk that supplies a head-mounted 'Britney mic'

03/05/18

In a B&B in cork trying to get tomorrow's secret demo working

03/05/18

Red Wine has not improved my ability to write C# code.

I was invited to University College Cork to discuss my project in a symposia on PhD by Creative Practice. The university was expanding their portfolio of courses, and had started to offer PhDs which presented the Research in other forms. They invited a range of guest speakers to discuss their work, and how knowledge is constructed in Media and Cultural Studies. The speakers from the symposia were then invited to present their work as a Journal Article for a special issue of *Alphaville*.

I stripped down the headset, and travelled across Northern Ireland and the Republic by train to present the work. The day before the presentation all of the drivers, plugins and devices needed to be updated, which meant having to recode sections of the experience in my B&B before, and then after, the speaker dinner.

Showcasing Equine Eyes to help promote inter-species empathy and understanding at UCC today.

The presentation in UCC was really well-received, and attendees were able to try a stripped-down version of the work and give feedback. Some of the attendees were longtime friends, and ex-colleagues who had started teaching at Ulster the same month, but then moved institution.

The work and experience were really limited by being tethered to the laptop. Attendees had to sit and discuss the work, what they saw, and how it made them feel. This feedback from experienced academics in Film, Media, Drama and Cultural Studies was really valuable in helping to think through how to deliver the experience to audiences and what to prioritise in the next steps of making.

Exploring the borders between human and non-human animals | Alan Hook | TEDxBallybofey

68 views

👍 5   👎 0   ↗ Share   ⬇ Download

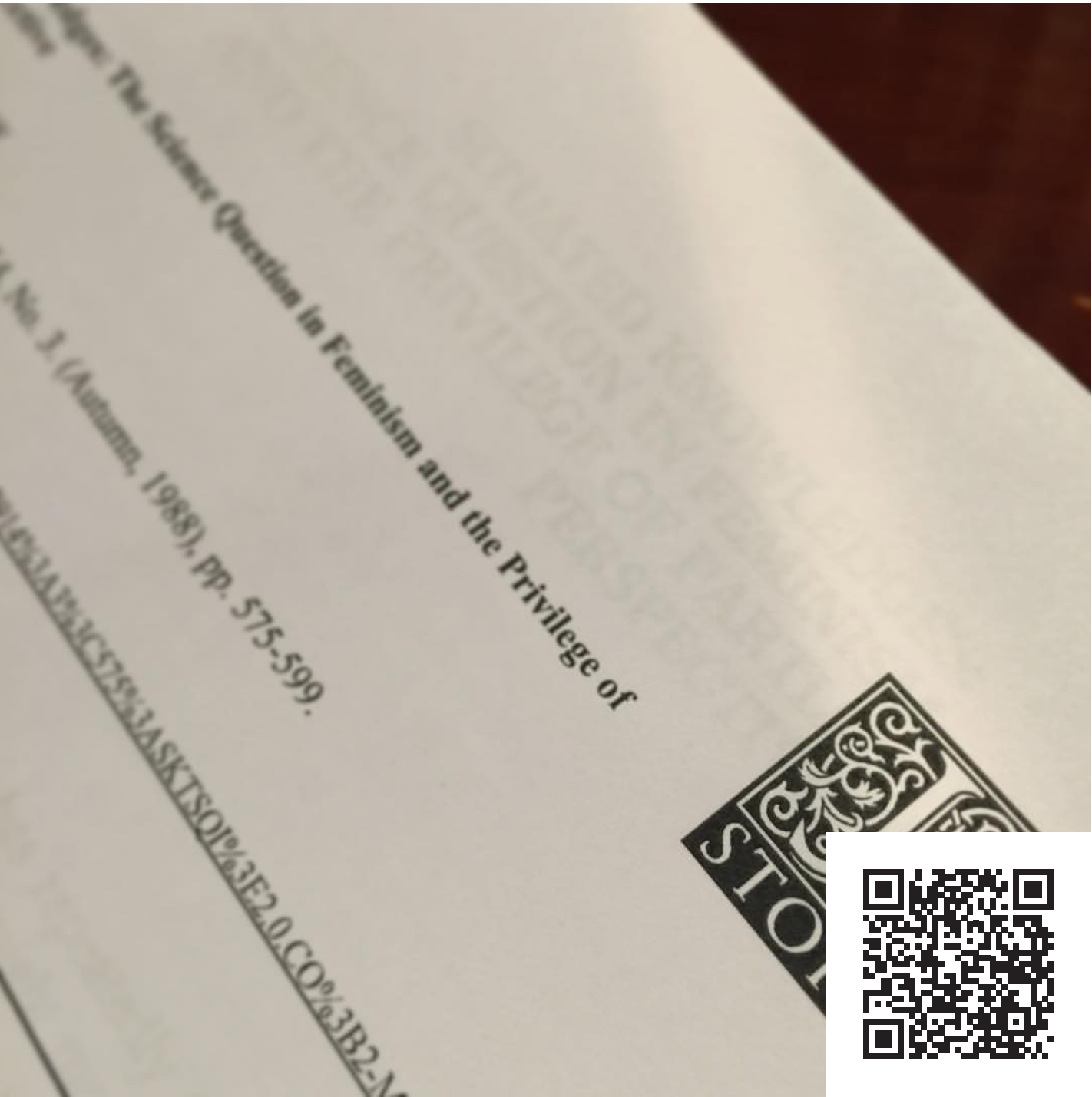**TEDx** TEDx Talks
13M subscribers

The TEDx talk was released, with a follow up article on the TEDx blog. The blog wrote "Practice an act of radical empathy — try to put yourself in the hoofsteps, pawprints and undulations of other creatures and appreciate all the ways of being and doing that exist on this planet." The talk was really good at helping to start a dialogue with other Researchers. I'm not sure I agree with everything I committed to film that day, but it has offered interesting opportunities for collaboration and drew the attention of academics, filmmakers, and other artists.

After the feedback from Cork, and the TEDx talk, I was keen to showcase the work widely for feedback before I started to make the project more solid. I knew that it would be important to emphasise play in the work, and had worked through some of the limitations that I saw in some of the critical making. I submitted the work to the *Playful Encounters* conference in China. I had discussed the work, and gathered feedback from lots of different scholarly communities, but I wanted the opportunity to present to academics that specifically worked with play, to help develop out the ideas.

While in China I started to read a wider range of Haraway's work and started to track back some of the network of ideas. I had read Cyborg Manifesto as part of my Masters, and incorporated it into my

Undergraduate teaching, but this night I sat in an odd sushi restaurant in China and read Haraway's work on Situated Knowledge.

The work felt really rich with ideas, and helped to weave together some of my understanding for the project. This paper for me was a milestone in starting to think about the way that knowledge is crafted and shaped.

29/09/18

Today I demoed (a stripped down version of) my research project *Equine Eyes* that helps simulate horses vision using immersive tech in Ningbo, China.

I presented the Research and a demo at the conference. The work, however, caused issues again. The demo worked but because the prototype was built on the back of commercial hardware and systems, it really struggled in China. The system needed to connect to the network to run, and sections were blocked. It really limited the experience and meant that the work needed to be reconfigured before the demo (again).

I hadn't realised until I was already presenting, but Hana Wirman, a very prominent Games and Play scholar, well-known and published in the ACI community, attended the talk and demo. It was really interesting to chat through the project with her and get feedback on the methods she used for working with other animals.

01/11/18

Today I wrote ~1000 words on Research through Design. Almost got an article finished that I've been trying to write for about 6 months.
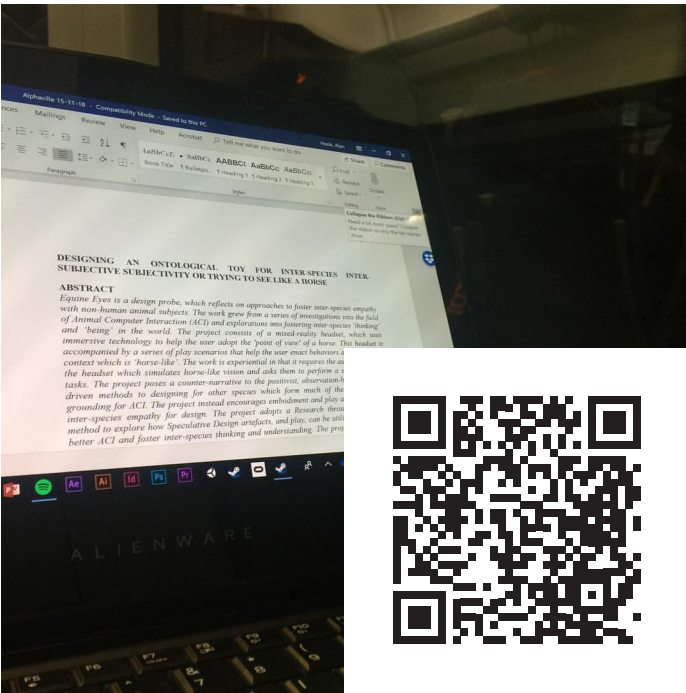
15/11/18

At the moment, I'm always writing.
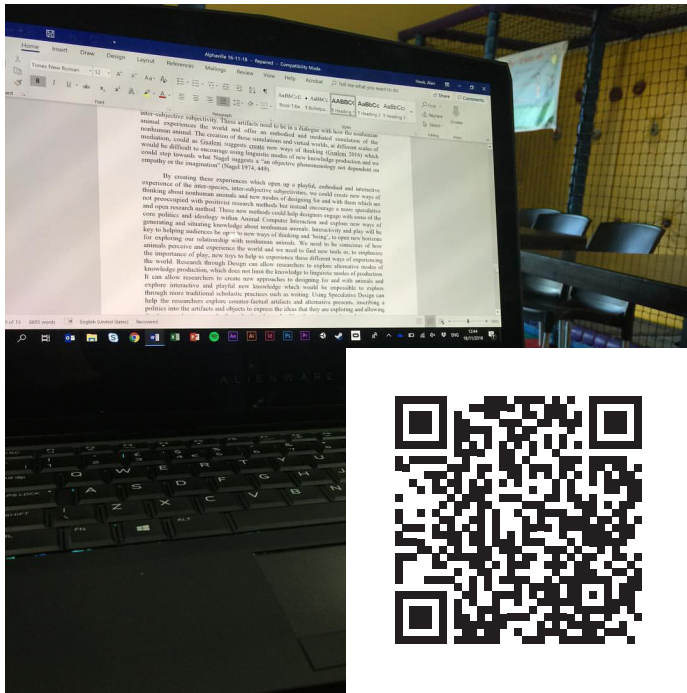
18/11/18

Sunday soft play writing. Getting close now.
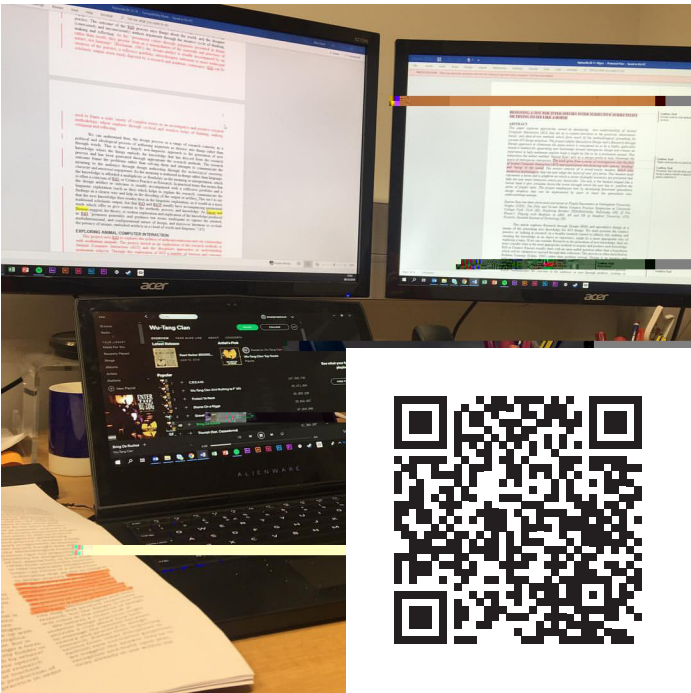
06/12/18

Bringing Da Ruckus in a substantial redraft of my latest writing

I turned to writing again to piece together my ideas about critical making, craft, and the limitations of language. The submitted drafts of the paper were very different to the end publication because of the site of publication. It was moulded out of some of the previous work I presented, with Julian Stadon, at the VSMM conference, entitled *Oblique Strategies for Mixed Reality Art* (VSMM2017 International Society on Virtual Systems and MultiMedia).

For a while, I put down the cycles of making, and focused on writing as a way to knot and unknot my ideas for the work. Sometimes I wrote in my office, but sometime I wrote while my kids played in the soft play on a Sunday morning – drinking cups of coffee.

Redrafting, and trying to cut words, but more and more words are needed...

Drinking wine, figuring out a new project.

Working and reworking the writing has been really important to the thesis and the practice. I think that its essential to articulate the work academically – however resistant I am to the way that systems of power discipline knowledge – but it never been something I've found easy or enjoyable. It might be my dyslexia, it might be that I prefer making, it might be a resistance to the primacy of language to knowledge, it might be because I'm not great at it, but it's important to thinking and rhetoric.

After writing and working the ideas, after chatting through and showcasing the project in China, I needed to find ways to restructure the work. This diagram was an attempt to map what a wireless version of the headset might be. The idea was to mount two IP cameras in a headset and send the images over the network to the textures in Unity, and then wirelessly back to the Rift using one of the prototype hacked wireless Rift headsets.

This was the start of thinking about how the headset could be redesigned to make it more playful and interactive. Less restrictive, where the audience could move about.

Drinking and Writing, and Writing and Drinking. Almost finished the final edits thanks to my fantastic wife and copy editor @rachyconks

WTAF!!! More research!

This paper was the final draft of the article in *Alphaville*. The article needed so many rewrites because the editors wanted the writing to fit into the canon of Media and Cultural Studies – they were really keen to publish the research but wanted the writing to have a particular tone, style and language.

The writing was published as Hook, A. (2019). Exploring Speculative Methods: Building Artifacts To Explore 'Interspecies Intersubjective Subjectivity' . *Alphaville: Journal of Film and Screen Media*, 17, 146-164. https://doi.org/10.33178/alpha.17.09

Some of this writing finds its way into the thesis, redrafted, reworked and reconstituted.

I wanted to explore other types of making. The project as a whole had come under heavy criticism for being technology-led, and there had emerged an academic narrative that VR was an 'empathy machine'. I wanted to play around with other ways that we use reflection and action to structure and restructure our thinking. I started a mini-project which was a spoof of the Microsoft Inclusive Design toolkit. I used the bank of interspecies philosophy that I had built through the cataloguing journal articles to rework the design - adopting the original editorial design structures, but reworking the text and logic to explore all of the problematic ways we have philosophized human/animal relations.

The work was inspired by some quotes in the academic literature which tried to legitimise ACI as a field by linking it to working with different, lower levels of cognition. Some early work in ACI seemed to suggest that the usefulness of ACI could be in its work with 'otherness' and that it could offer useful outcomes for the Inclusive Design movements. For me, there was a really problematic politic in this, as it overlooked the long cultural history of marginalising people with a disability, and other marginalised communities, by comparing them with Animals. I understand the sentiment, but the approach seems tactless at best, and ableist at worse. I think, though, that there are areas in the Sciences, and HCI, where these narratives can grow when the Researchers focus on the solutions and usefulness of applying Research which they see as objective and not culturally entangled.

Why it matters

Speculating on inclusivity not only opens up our Research and experiences to more species with a wider range of abilities. It also reflects how culture really is. All species are growing, changing, and adapting to the world around them every day. We want our designs to reflect that diversity.

Every decision we make can raise or lower barriers to participation in culture to other species. It's our collective responsibility to lower these barriers through inclusive speculations, designs, artefacts, and experiences.

Interspecies design defined

Interspecies design: A design methodology that enables and draws on the full range of nonhuman animal diversity.

Most importantly, this means including and learning from nonhuman animals with a range of perspectives.

Designing interspecies doesn't mean you're making one thing for all animals. You're designing a diversity of ways for different species to participate in an experience with a sense of belonging.

Many nonhuman animals are unable to participate in aspects of society, both physical and digital. Understanding why and how nonhuman animals are excluded gives us actionable steps to take towards interspecies design.

Accessibility defined

Accessibility: 1. The qualities that make an experience open to all. 2. A professional discipline aimed at achieving No. 1.

We get many questions about the difference between accessibility and interspecies design. An important distinction is that accessibility is an attribute, while interspecies design is a method. And while practicing interspecies design should make your products more accessible, it's not a process for meeting all acce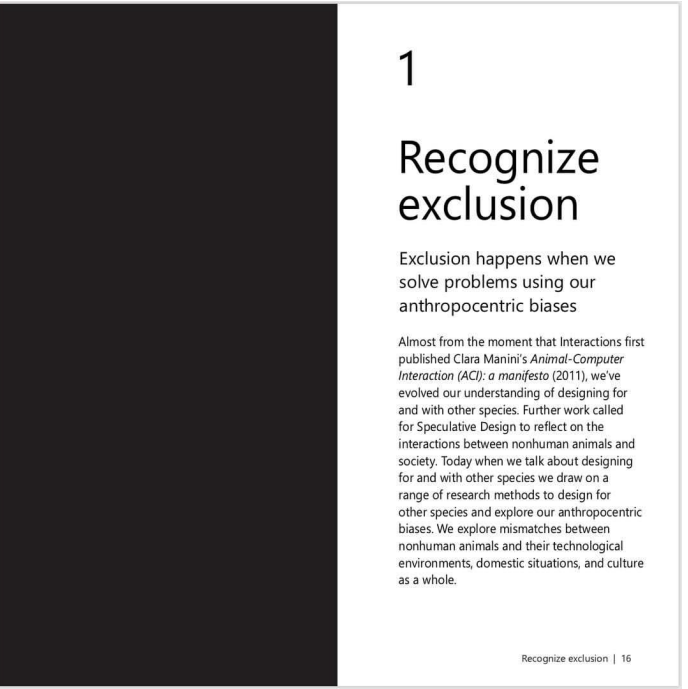ssibility standards. Ideally, accessibility and interspecies design work together to make experiences that are not only compliant with standards, but truly usable and open to other species.

11   The case for interspecies design | 12

The principles of interspecies design

Recognize exclusion
Learn from other species
Work with one, speculate for many

The principles of interspecies design | 14

1

Recognize exclusion

Exclusion happens when we solve problems using our anthropocentric biases

Almost from the moment that Interactions first published Clara Mancini's *Animal-Computer Interaction (ACI): a manifesto* (2011), we've evolved our understanding of designing for and with other species. Further work called for Speculative Design to reflect on the interactions between nonhuman animals and society. Today when we talk about designing for and with other species we draw on a range of research methods to design for other species and explore our anthropocentric biases. We explore mismatches between nonhuman animals and their technological environments, domestic situations, and culture as a whole.

Recognize exclusion | 16

17/12/18

Spent the day making a satire of the Microsoft Inclusive Design document for a new project on interspecies design, Speculative Design and the politics of inclusion
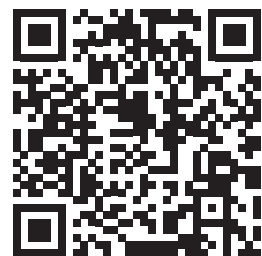
I still really like this work, and it became other things. There are sections which I'm not sure I would stand over now, but I think that there are interesting elements that I will revisit. Outside this project, I am often asked to develop a 'toolkit' as part of project outcomes. This mini project helped me reflect on what a toolkit does and the way it helps to structure knowledge through a set of 'frameworks for thinking'. The project also produced some other prototypes like a system for designing animal personas which I delivered remotely, during lockdown, to the Royal College of Art. All of the workshop participants were encouraged to bring an animal with which to work with. Some bought pets like cats, dog and jellyfish, others bought species that lived in their houses like spiders. It was a fascinating process, discussing how we can use imagination to become more attentive to other species.

During this project I posted the layout as I developed it, which means that there are a few posts in a very short period of time which are simular or repeat - this was a symptom of working really quickly pulling together the Research and laying it out in InDesign. The activity cards do not feature in the posts, but are available online alongside the full toolkit, booklet, and project outlines.

I've been busy on a new project which explores the political and rhetorical similarities and tensions between Inclusive Design and Interspecies Design. It is based on, and critiques, Microsoft's Inclusive Design guidebook and toolkit.

Interspecies Design
Imagination Lancaster

Welcome to interspecies design. We offer these guidelines as a simple starting point for meaningful change.

Interspecies design is for those who want to make speculative design for greatest number of species.

These guidelines are the result of hundreds of hours of Research and reflection on our relationship with nonhuman animals. Still, we have a lot of work to do before these practices are our everyday routine. Until then, we're inspired to share and improve in partnership with all species, and with you.

- Imagination Lancaster

The case for interspecies design

Let's face it, as speculative designers, we often generate and evaluate ideas based on what we know and the limits of our imagination. We strive to explore complex social, cultural and political issues and design for possible futures.

But here's the problem: If we use our own abilities as a baseline, we make things that are easy for human animals to use, but difficult for all other nonhuman animals.

There are 8.7 million species in the world. Our ambition is to speculate on designs that are physically, cognitively, and emotionally appropriate for each of them. It starts with seeing species diversity as a resource for better designs.

Who we design for

If we use our abilities and biases as a starting point, we end up with artefacts designed for and with animals of a specific species, language ability, tech literacy, and physical ability. Those with specific access to culture, technology and politics.

Who gets excluded

When it comes to animals, there's no such thing as "similar". The interactions we design with technology depends heavily on what they can see, hear, say, and touch. Assuming those senses and abilities are the same or similar to human animals creates the potential to ignore much of the range of animality.

The case for interspecies design | 6   7   The case for interspecies design | 8

1
Recognize exclusion

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Almost from the moment that Interactions first published Clara Manini's *Animal-Computer Interaction (ACI): a manifesto* (2011), we've evolved our understanding of designing for and with other species. Further work called for Speculative Design to reflect on the interactions between nonhuman animals and technology. Today when we talk about designing for and with other species we draw on a range of research methods to design for other species and explore our anthropocentric biases. We explore mismatches between nonhuman animals and their technological environments, domestic situations, and culture as a whole.

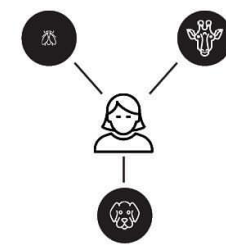| | 1985 | Today |

Human animal as design subject

"Design is an art of thought directed to practical action through the persuasiveness of objects and, therefore, design involves the vivid expression of competing ideas about social life."

- Buchanan (1985 p7)

All animals as design subjects

"anthropocentric bias denies the reality that human animals are just one species in the family of animals. Interaction environments are rarely limited to just the human species. Nonhuman animals at varying scales (including microbes, mosquitoes, and horses) influence many aspects of our culture, practice, and behaviour."

– North (2016 p50)

Recognize exclusion | 16   17   Recognize exclusion | 18

After I posted the project online, it was shared in the Exeter Anthrozoology as Symbiotic Ethics (EASE) Research group. They wrote "EASE's Dr Steve North is quoted by Alan Hook (a Researcher in New Media and Play at the University of Ulster) who is working on a new project "which explores the political and rhetorical similarities and tensions between Inclusive Design and Interspecies Design". It is based on, and critiques, Microsoft's Inclusive Design guidebook and toolkit: https://siddarth.design/inclusive-a-microsoft-design…"

Steve North then shared this on social media "Thanks to, Alan Hook for mentioning my work in your exciting new project, which critiques and extends existing guidelines on inclusive design, by introducing interspecies interactions to the mix". The toolkit didn't become a major part of the thesis, in order that I could focus the narrative and present a line of enquiry through the mess but I still think there was important work and thinking which happened while I crafted it.

I'm a horse.

A horse of course.

I tried and tested a series of solutions for the mask section of the headset, working with a range of materials. This was the first full build of a mask, purchased as a pdf net from a theature costume designer on Etsy. I needed to start to work towards the presentation of the work for the upgrade viva, so needed to make the work more presentable and lock down the art direction. It was really important to consider the shape, colour and form to help hone the rhetoric.

I played with a number of different approaches, and experimented with different props, forms and outcomes. I was really interested in how humans had 'performed as horse'. This is a facial prosthetic developed for Furries, which I purchased on Etsy.
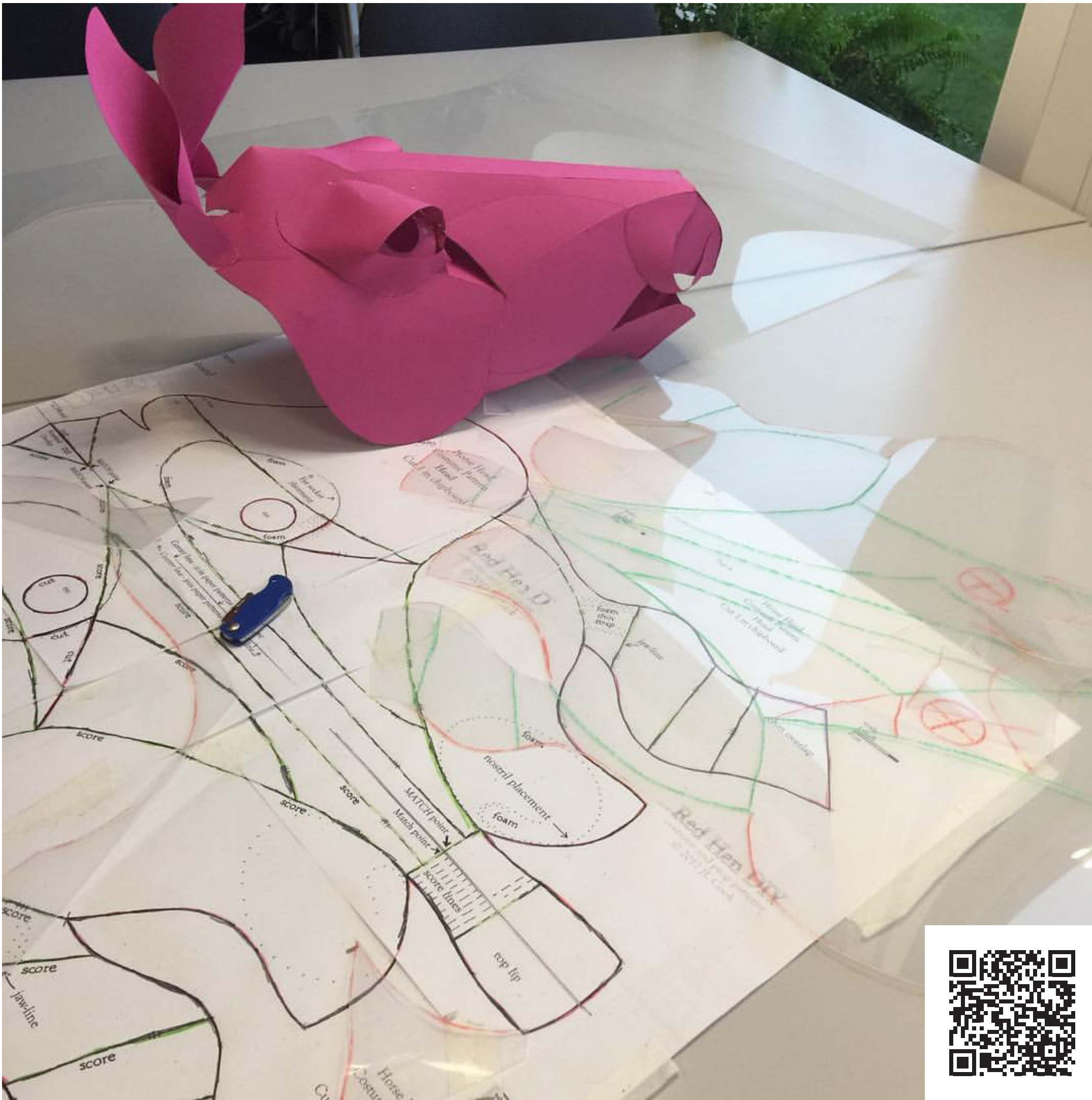
10/01/19

Producing failed prototypes today as I try and move from card to plastic prototypes.

To create the final prototype for the headset, I used a photocopier to enlarge the pattern so that the width between the two sides of the headset matched the width of the Oculus Rift headset. It took a little trial and error but it helped to scale and modify the Red Hen design so that it could be integrated into the existing structures.

I tested a series of colours, thicknesses and materials with the design: foam, card, plastic to test what it felt like and how it presented the work. I was keen on a transparent headset where you could see the facial expressions of the human inside the work, but the plastic was too fragile compared to coloured versions and often cracked and shattered when it was bent and folded.

All of the prototypes where hand-cut and crafted using this template.
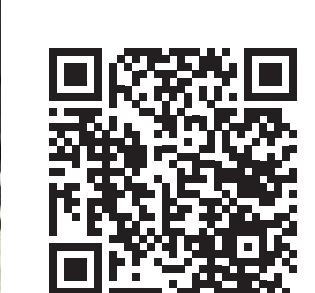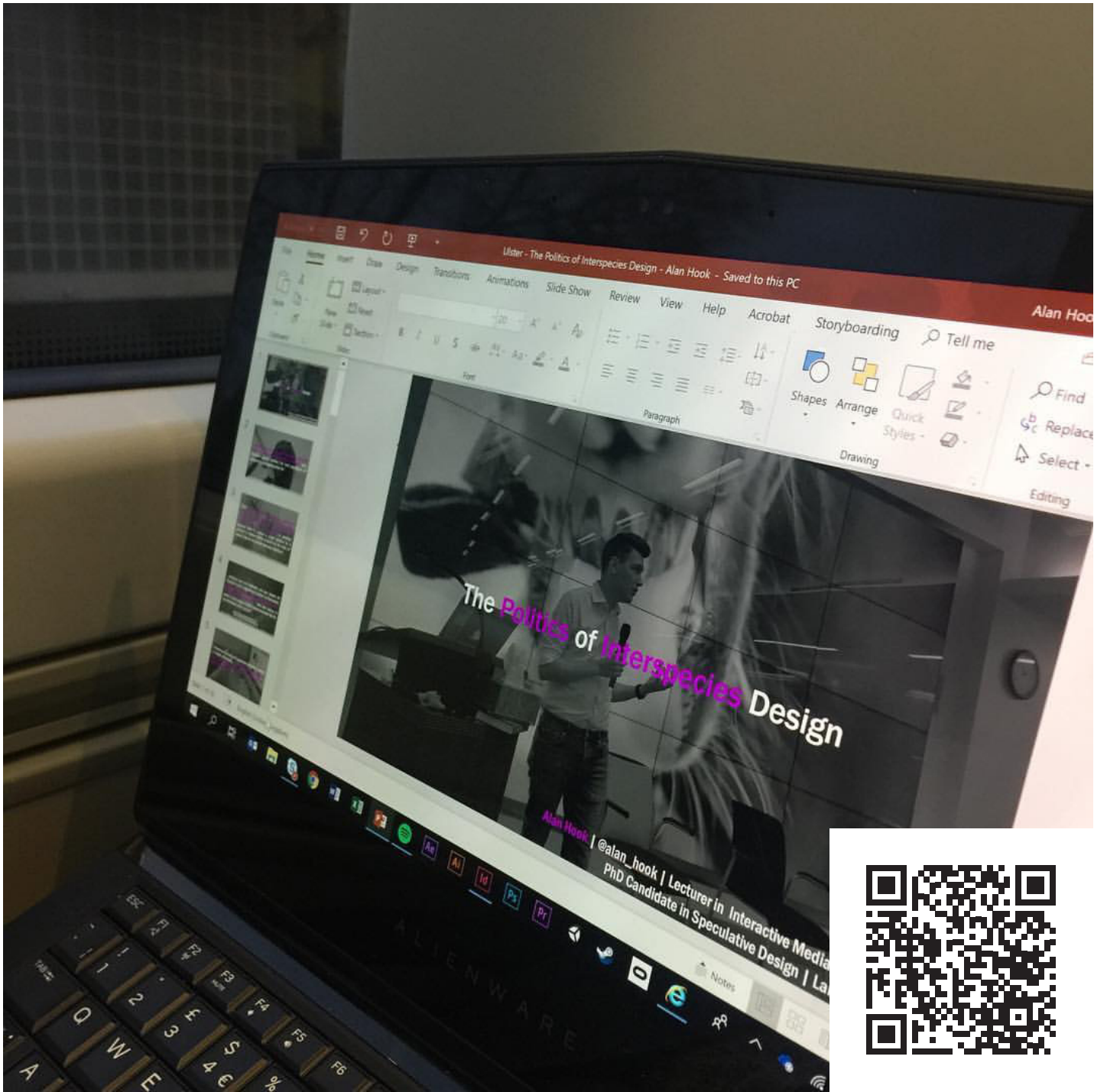
Digital prototyping going better than physical prototyping today

For the presentation of work at viva it was really important to make sure that the work was more stable than it had been in Cork or Ningbo. This meant delving into the underlying code again and starting to rebuild the experience from the ground up with less proprietary dependencies. It felt a little like wasted work sometimes because I knew what the outcome would be; I wasn't changing anything aesthetically, but rebuilding the underlying systems. Still, it was important to make sure that the work was well crafted and stable.

Writing a presentation for this afternoons workshop on the "Politics of Interspecies Design" for the Technology, Culture and Politics. Showcasing some work I finished yesterday.
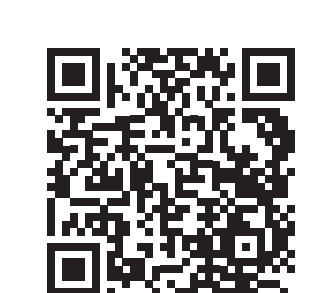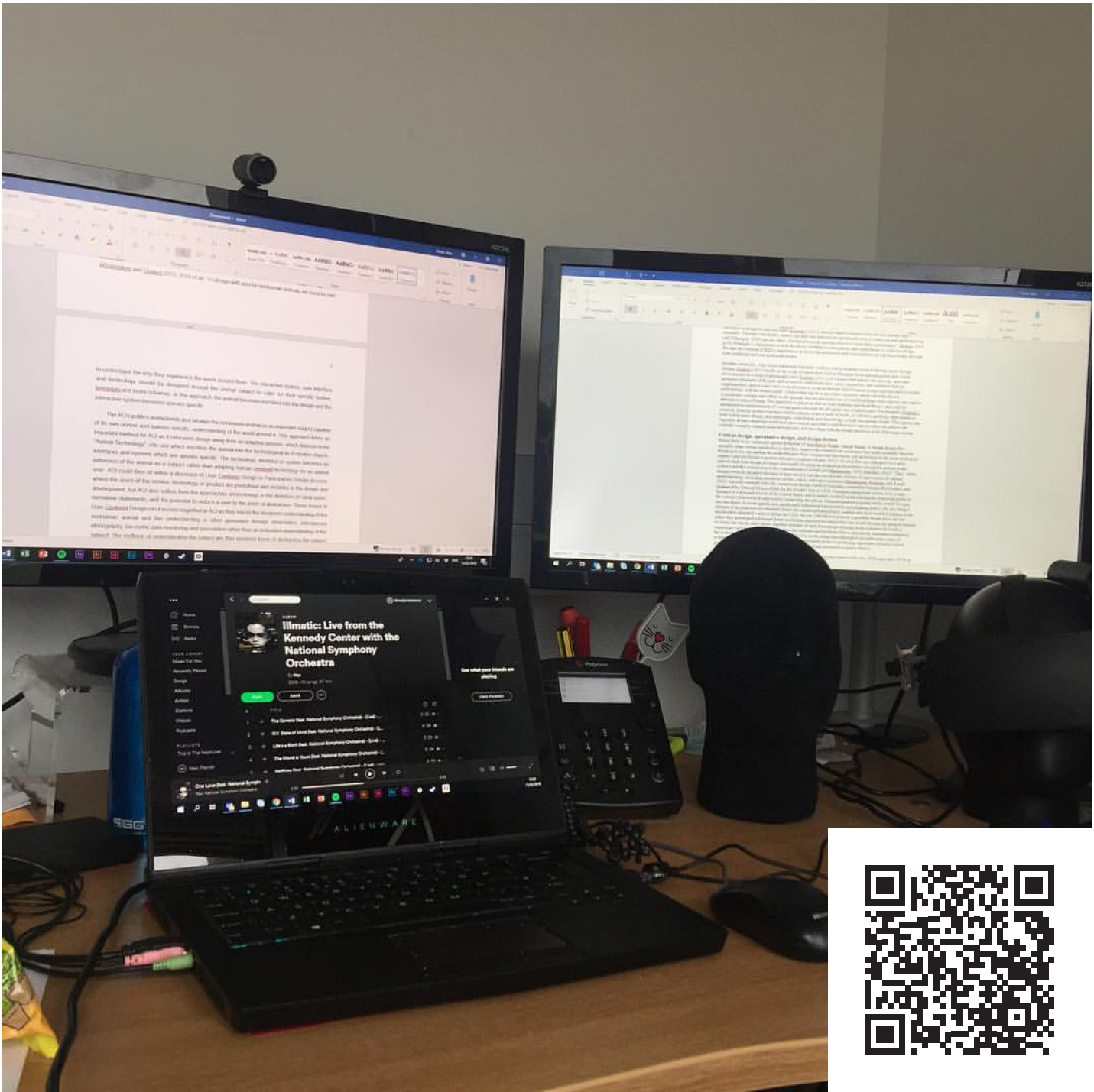
I'm writing again! Watch out!!!

I was invited to present some of the Research at a symposium on Technology, Politics and Culture at Ulster University. The political theorists who attended the small gathering were thinking about data and positivism in the formation of the city. The presentation to a very different academic audience drew out interesting questions of interspecies participation and informed consent. The questions poked at power dynamics, human exceptionalism, social responsibility, power and dominance - all important topics for ACI which have been explored by the community in different ways.

I think it's essential to present Research outside of your disciplinary constraints to find new angles and see your work through different lenses. It was probably one of the most challenging of instances, to a room of philosophy and cultural studies academics who asked probing and difficult questions about phenomenology, ontology, epistemology… but valuable in helping me test the more complicated arguments I wanted to make which I didn't have the language for in the *Alphaville* article.

I needed to take all of the disparate pieces of writing and ideas and try and craft them into a coherent narrative for assessment at the viva. This required reworking some of the *Alphaville* article, conference talks to find a way of working between HCI and RtD Research.

understand how a nonhuman animal experiences the world and design for these animals, there lies the possibility to investigate a range of interconnected design practices such as Critical Design, Speculative Design, Design Fictions, and Design Probes. These alternative methods could be used to rethink the design process and focus on the design rhetoric in ACI. Through these methods, design can be used as a process of "engendering debates and changing perspectives about important social issues" (Bardzell Bardzell, & Stolterman 2014 1952). For example, we could use a Design Probe as a discursive method to explore the possibility (or impossibility), of an inter-species "inter-subjective subjectivity" (Reinerth, 2010/11)

SPECULATING ON OTHER SPECIES

Critical and Speculative Design use design methods and processes to create critical artifacts and objects, which are often outside of commercial practices and serve an inquisitive, evocative or provocative role (Malpass, 2010). The objects are usually counter to conventions or question usability, profit or taste (Mazé and Redströrm, 2007) and created as a process or product of critical reflection by the designer. Dunne and Raby suggest that the practice "rejects how things are now as being the only possibility", and that "it provides a critique of the prevailing situation through designs that embody alternative social, cultural, technical, or economic values" (2001, 58). This has been considered alongside Contemporary Art practices as a method which tries to open spaces for reflection, debate and critique and are often displayed in showrooms or galleries (Bradzell, Bardzell and Stolterman 2014). There are a broad range of connected design methods broadly considered as speculative design, critical design, or design fiction which arguably share certain similarities in that they:

remove the commercial constraints that might normally limit the design process, uncoupling the methodologies from commercial discourses; use prototypes as the main method of enquiry; and use fiction to present alternative realities outside of popular cultural attitudes and practices through complex and messy social, cultural and political issues (Auger, 2013). As indicative of a more general shift from design no longer principally focusing on problem instead to the cultural and the construction of the communicative (Arnall and Martin Balsamo, 2011). Whilst design research can aid technological innovation it can also involv

Words.

I pulled apart my work, and pieced it back together again – removing many of the sections that I had to redraft into the article around Creative Practice. There was lots in the *Alphaville* first draft about RtD and the methods used, which I was required to take out to meet word count, but also in response to feedback from reviewers who wanted the piece to sit within one disciplinary discourse. I think that this really focused me on method and on the way that disciplines and methods shape what we do – which I believe is an important contribution of the thesis.
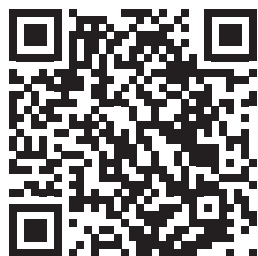
07/03/19

Equine Eyes is a Speculative Design project which explores methods for building Interspecies understanding and empathy. The headset simulates horse vision to propagate an Interspecies inter-subjectivity.

08/03/19

Final user testing today in Coleraine before demo and assessment on Monday

In the preparation for the viva, I did a photoshoot which produced one of the more recognised images of the work. At this stage of the thesis, I was still using terms such as 'inter-subjective' – which I think are problematic to posthumanist discourses and privilege the subjects as distinct. It does not dovetail with Object Orientated Ontology, and does not recognise the assemblages we make.
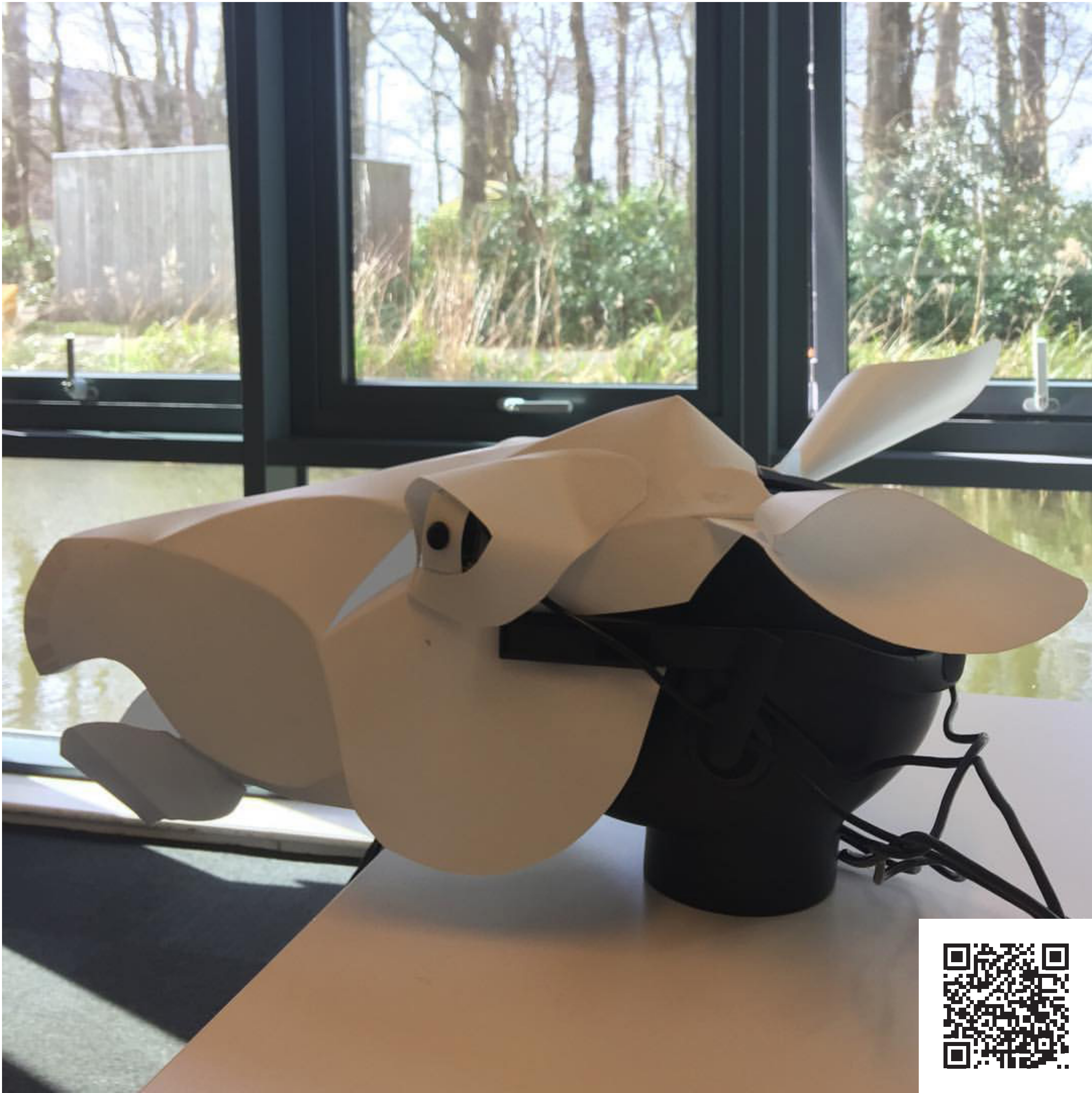
11/03/19

Equine Eyes PhD appraisal.

I took the work for the viva appraisal at Imagination Lancaster where we were able to test and play with the work. The project was well-received, but there were some challenging questions about how the work sits within Design Research.

One of the aims arising from the viva was to review how the work was playful, or how it could be more playful.

It was a real pleasure to present the work to Serena Pollastri and Professor Paul Rodgers for feedback and discussion.

25/03/19

Demoed some of my PhD work in "Speculative Methods for Interspecies Design" at the Imagine festival today at @UlsterUni #imaginebelfast

I was asked by Ulster University to contribute to a workshop in Virtual Reality and new Research for the Imagine Festival of Social Sciences. The audience was full of psychology Researchers and Social Scientists who were very interested in how the effectiveness was measured and spent the Q&A section planning out for me ways that I could measure the effects of the headset and collect data – the positivists had shown up and renarrativised the work – they wanted to put eye trackers in it, biometric sensors, dohickeys that monitored and surveyed the participants.

It was all interesting to listen to and discuss and really opened a dialogue between the Humanities and Social Science Researchers (two faculties that had recently merged at the institution) about what constituted valid knowledge.
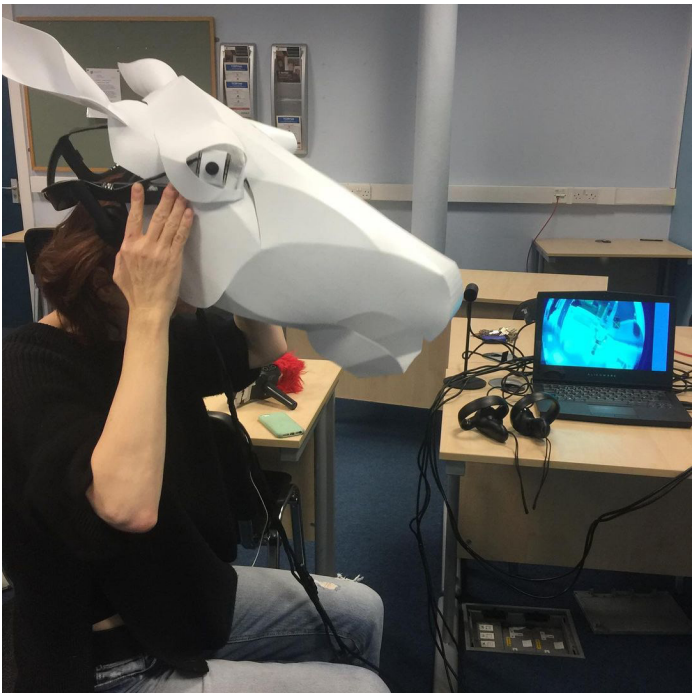
26/07/19

*New annual leave book has arrived.
Gearing up for a relaxing and brain
expanding break.*
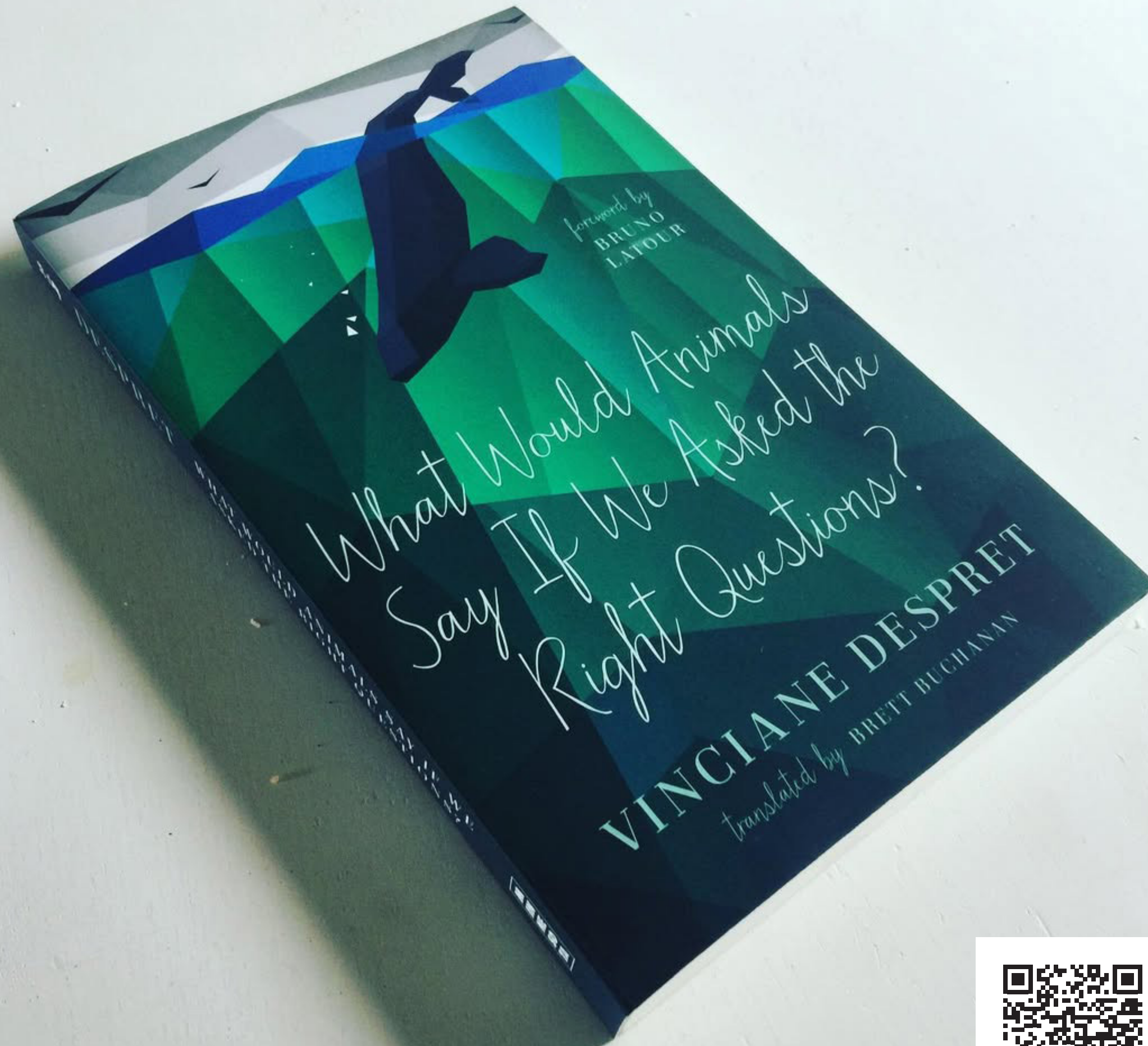
This book really changed my thinking about human and nonhuman
animal relationships. It is a book to which I always return; it explores the
complexity of the world in a really thoughtful and probing way.

28/09/19

This afternoon I got to hang out with podcasting legends Collie Ennis and Colette Kinsella from The Critter Shed and chat about my research

I love podcasts, and one of my favourites was the *Critter Shed* from Dublin-based based producers Collie Ennis and Colette Kinsella, which is an educational podcast about insect life. In one episode, Collie said something about how he'd love to experience the world as a frog. I contacted the producers and offered to bring the headset.

I travelled with it to Ireland on the train, and tied the trip to another visit, a chat with a documentary filmmaker. I spent a lot of time prepping the work, laying it out and testing the systems the day before I travelled. When I arrived in Dublin, the project wouldn't boot to the headset. The two podcasters attempted to interview me while I tried to recode the system in a small meeting room in Trinity University. I couldn't get the device working. It was embarrassing and deflating, but the two

are so kind, open and inquisitive that it was still a really enjoyable and worthwhile trip.

None of the interview or audio ever made it into the public domain, but it was largely just them asking me what it was like when it worked, while I hacked away at the code in a fluster. In the images, you can see the view which was supposed to export to the headset. This is us imagining what it might be like to experience a headset that helps you imagine…

29/09/19

Today I've been working with the film maker Flavia Moraes from Brazil on a Documentary on Interspecies Empathy and our relationship with nonhuman animals.

I was contacted by Brazilian documentarian Flavia Moraes who was travelling to Europe and wanted to interview me about my work, having seen the TEDx talk. The interview is part of the film *Visions in the Dark* which explored nonviolent ways to train horses. The headset still didn't work, but that doesn't matter for the camera.

During the filming I met the lead trainer from the Academy set up by Monty Roberts (the famous horse whisperer). We discussed the headset and the importance of being with horses – that the headset could have practical uses in horse handler training. It was really interesting to chat to someone who spends so much time with horses and cares so much for them.

21/11/19

Pretty excited about this, and my first work with Raspberry Pi

26/11/19

Trying to learn how to work in a YUV gamut colour space for a project.

After all the failed showcases of the work, I started a complete rebuild using Raspberry Pi as the core technology. I added to and changed the design spec for the project to prioritise being completely wireless, battery operated, and airlocked from the network.

Chatting to horse trainers, they suggested that it might be really important to be able to meet horses where they are, in fields, away from power supplies and networks.

The Stereo Pi is designed for building stereoscopic and immersive cameras for filming 3D footage or creating photospheres. It allows two distinct camera feeds, and I uncovered some tutorials that hackers had made to see yourself in third person which I used as a basis for a rebuild. The colour space in the Pi is different to the RGB which I have used in the past so I needed to complete a lot of desk-based research for design work to understand the YUV colour space.

chromaticity, D65 reference white, and linear RGB data (16 bits per color).

Instead of using a normalized range of 0–1, a range of –0.5 to +7.4999 is supported. Values below 0 and above 1 are what enable scRGB to have a larger gamut, compared to sRGB, even though it has the same primary colors. The correlation between the linear 16-bit scRGB values and normalized range are:

$$00000 = -0.5$$
$$04096 = 0.0 \text{ (black)}$$
$$12288 = 1.0 \text{ (white)}$$
$$16384 = 1.5$$
$$65535 = 7.4999$$

After gamma correction, the correlation between the nonlinear 16-bit $scR'G'B'$ values and normalized range are:

$$00000 = -0.7354$$
$$04096 = 0.0 \text{ (black)}$$
$$12288 = 1.0 \text{ (white)}$$
$$65535 = 2.3876$$

scRGB to sRGB Conversion

To convert linear 16-bit scRGB to gamma-corrected 8-bit sRGB (notated as $sR'G'B'_8$):

$$sB_8 = 0$$

if $4096 \leq (scR_{16}, scG_{16}, scB_{16}) \leq 4243$

$$sR'_8 = \text{round}[4.500 \times scR \times 255]$$
$$sG'_8 = \text{round}[4.500 \times scG \times 255]$$
$$sB'_8 = \text{round}[4.500 \times scB \times 255]$$

if $4244 \leq (scR_{16}, scG_{16}, scB_{16}) \leq 12288$

$$sR'_8 = \text{round}[(1.099 \times scR^{0.45} - 0.099) \times$$
$$sG'_8 = \text{round}[(1.099 \times scG^{0.45} - 0.099) \times$$
$$sB'_8 = \text{round}[(1.099 \times scB^{0.45} - 0.099) \times$$

if $(scR_{16}, scG_{16}, scB_{16}) \geq 12289$

$$sR'_8 = 255$$
$$sG'_8 = 255$$
$$sB'_8 = 255$$

YUV Color Space

The YUV color space is used by the (Phase Alternation Line), NTSC (Na Television System Committee), and SE (Sequentiel Couleur Avec Mémoire or Se tial Color with Memory) composite color standards. The black-and-white system only luma (Y) information; color inform (U and V) was added in such a way black-and-white receiver w normal black-and-white pic ers decoded the additional display a color picture.

29/11/19

*Trying to learn me some Raspberry
Pis for my project but it's tricky.*

I managed to follow the tutorials and get two live camera feeds, with
200 FOV cameras, into the PI and back out into a HDMI 7" screen.

This was that start of the reworking process – post-viva – to redevelop
the work. It had become critical to the outcomes of the project that the
audience had more freedom of movement and flexibility, and that they
were able to play.

I purchased some headsets which were designed for mobile phones to house the work. This meant that I didn't need to design the strap structure around the head, or the lenses. The headsets need a little modification to run the wires, but offer a really quick solution to build a foundational framework.

The colour space work was a little more tricky than expected. I worked with the hacker and maker communities online – linked in the thesis prototyping steps – but the code base was unfamiliar and difficult.

I managed to piece together all the sections for testing, and could take in two 220 FOV camera feeds, and then structure them side by side for the HDMI in a format that worked.
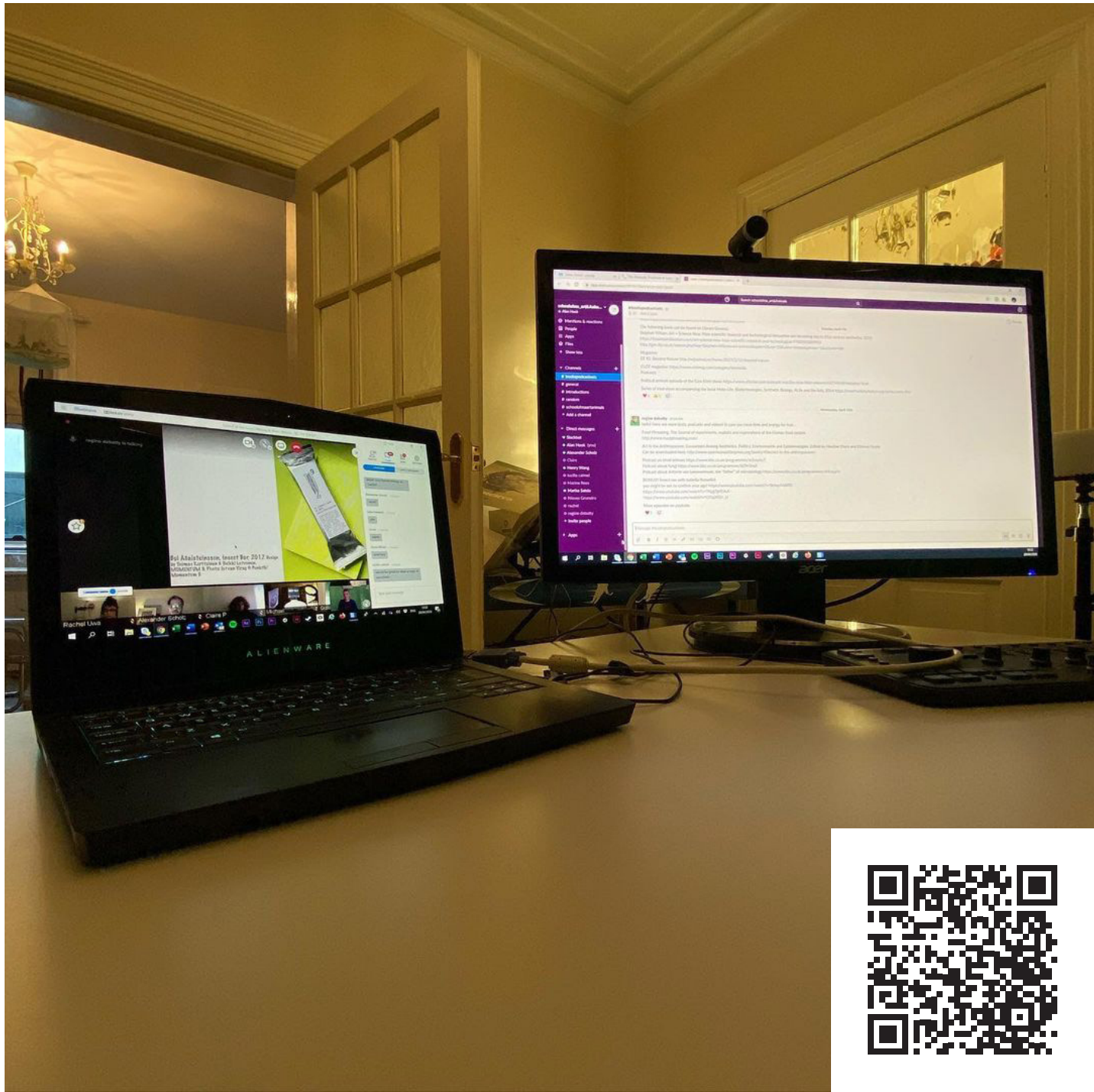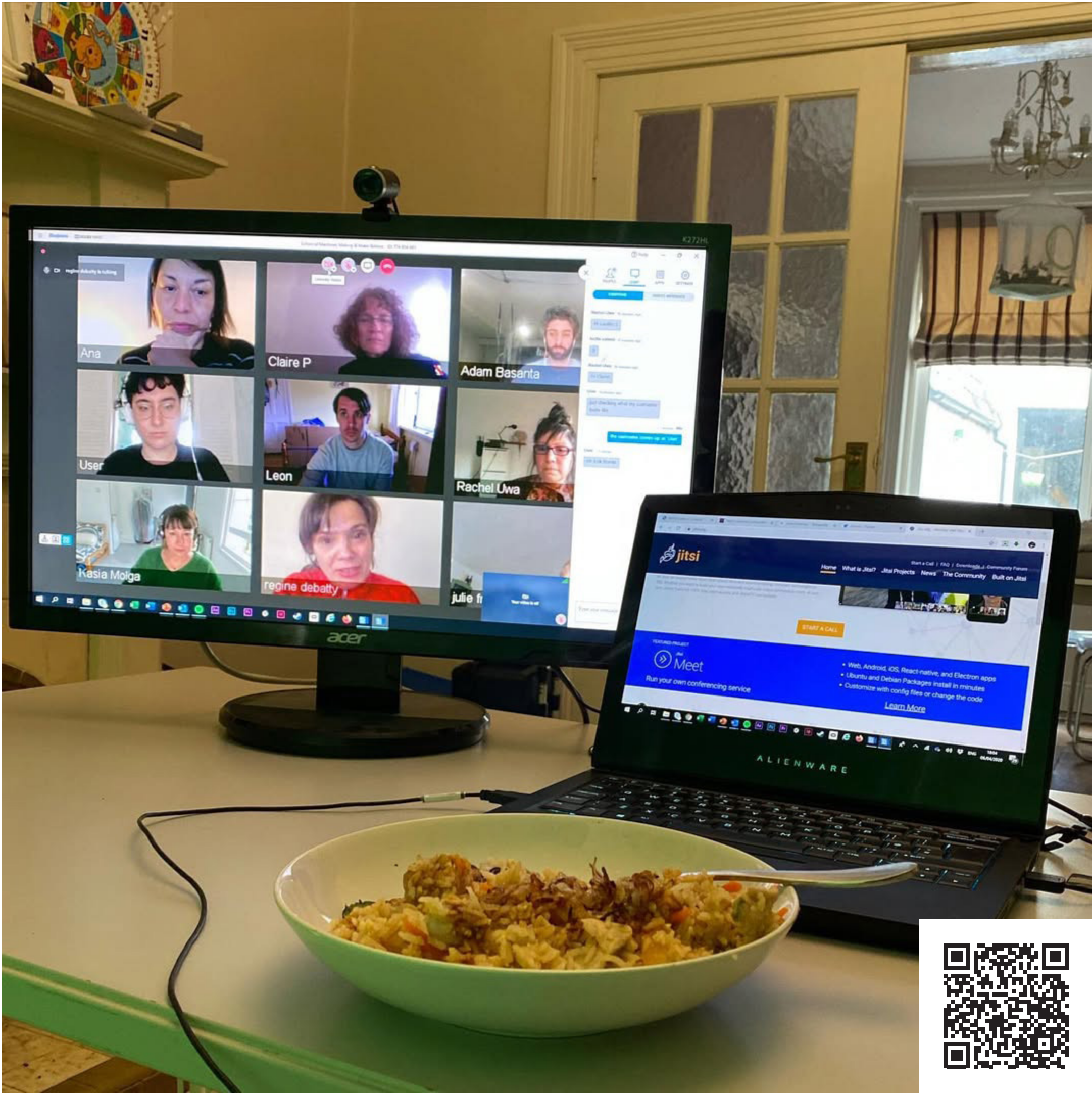
Today was the first day of my night school on Art and Animals, and the fantastic rachyconks cooked me a nice dinner to eat.

20/04/20

Doing some learning online.

During the lockdown, work, both in and outside the PhD, was hard. I had taken a management role in the school which meant that there wasn't a lot of time or space for the thesis work. The workload tripled, and I had to balance home schooling. To try and keep a regular appointment with my thinking, I enrolled in an online course run by one of my favourite bloggers, Regine Debatty, who runs WeMakeMoneyNotArt – which has been a big influence on my practice.

The online course met weekly, with lectures from Debatty on the intersections of arts practice and animality, and discussion groups on posthumanist thought. It was lovely, and I think important, to take some time and space in the mess of COVID to stay connected to my thinking, and with a community of makers with similar concerns. I met so many amazing artists and designers working with animals and discussed ethics, craft, feminism, and more gallery-based outcomes.

22/04/20

Instead of writing the paper for you to read, can you just imagine what it says by mushing all these already published books together?

Finding the headspace in the pandemic to write was impossible for me. I just wanted to mush together all of the things I'd read. When im working on a project, I like to visualise the outcomes by putting all the things I'm working between together in a pile. Usually this is a print out of 6-8 existing projects stuck on a wall which means that I can put Post-It notes between then to build a direction and sketch.

Doesn't really work with books though...

23/06/2020

I have been working though rushes from a shoot last year for days. Listening to myself waffle on. I've edited down an interview about my current research project (link in bio)

Moraes sent through a copy of all of the rushes from the interview I did in Dublin and they allowed me to cut from them what I wanted. I cut two stories, one academic and one personal, and shared them online.

"Everyday I'm hustlin"

Re-capturing bovine life: Robot–cow relationships, freedom and control in dairy farming

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Keywords:
Milking
Farming
Animals

ABSTRACT

Robotic milking machines are novel technologies that take over the labour of the need for human–animal interactions. Replacing 'conventional' twice-a-[day] people with a system that supposedly allows cows the freedom to be milked [when] they choose, it is claimed that robotic milking has health and welfare benefi[ts] ductivity, and has lifestyle advantages for dairy farmers. Such claims are ce[ntral to the] installation of robotic milkers clearly establishes new forms of relationships be[tween] and dairy farmers.

This paper draws on in-depth interviews with farmers and [examines] relationships between representations of robotic milkers as a [...] autonomy, and practices and mechanisms which suggest that [...] important ways through the introduction of this technology. [...] changes in what it is to 'be bovine' in relation to milking robot[s ...] framing of cows' behaviour and 'nature' by dairy farmers an[d ...] interaction. Second, we examine how such changes in bov[ine ...] tions of biopower which focus on knowledge [...] body and the herd. Such knowled[ge ...] dairy are integral to th[e ...] subjectivi[...]

The robotic milking machines are an often cited example of ACI for animal welfare that has been widely adopted by an industry, an example of scalability. I always found the idea interesting, but couldn't really orientate myself around why. This paper kept surfacing in searches, but because I wasn't working in an agricultural context, I hadn't really read it before. To this day, though, it is one of the most profound pieces of writing about ACI that I have read because it digs deep into the cultural power dynamics and how technology can shift cultural framings.

This is one of my favourite pieces of academic writing, and I love that it's in the *Journal of Rural Studies* – a space outside of the canon of ACI research, where it has closer connections with the communities, and inequalities it discusses.
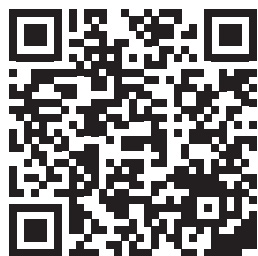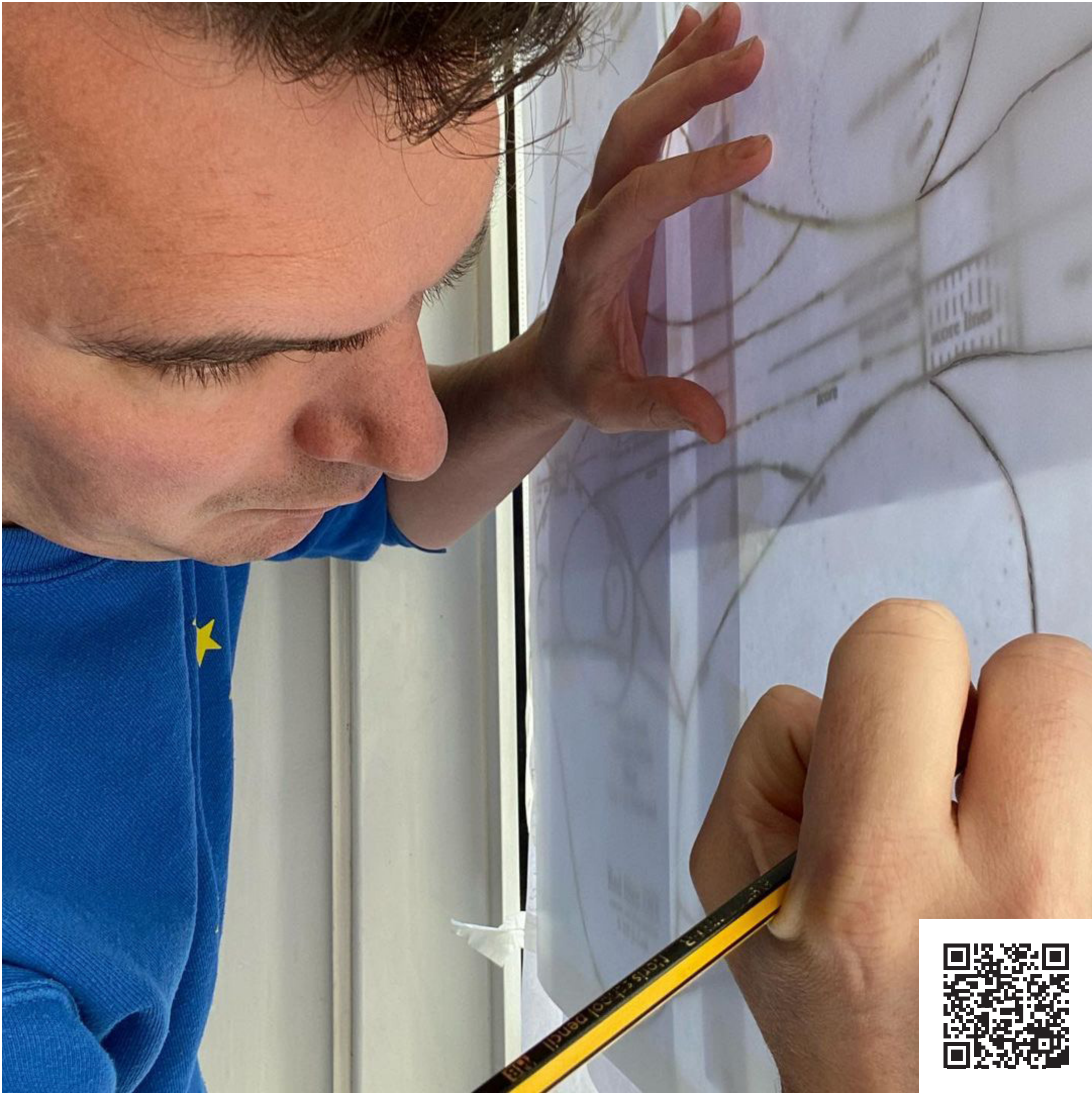
It's been great to block out time today to do some "making". New prototype coming next week.

Now that the technology worked, I started to build the housing for the prototype. The wireless prototype used the same pattern and housing as the Oculus version in the prototyping stages. I was happy with the shape and it had gathered media attention, so changing the look at this point wasn't necessary – and there were short production timelines before the conference and exhibition.

20/10/21

I'm Britney Bitch.
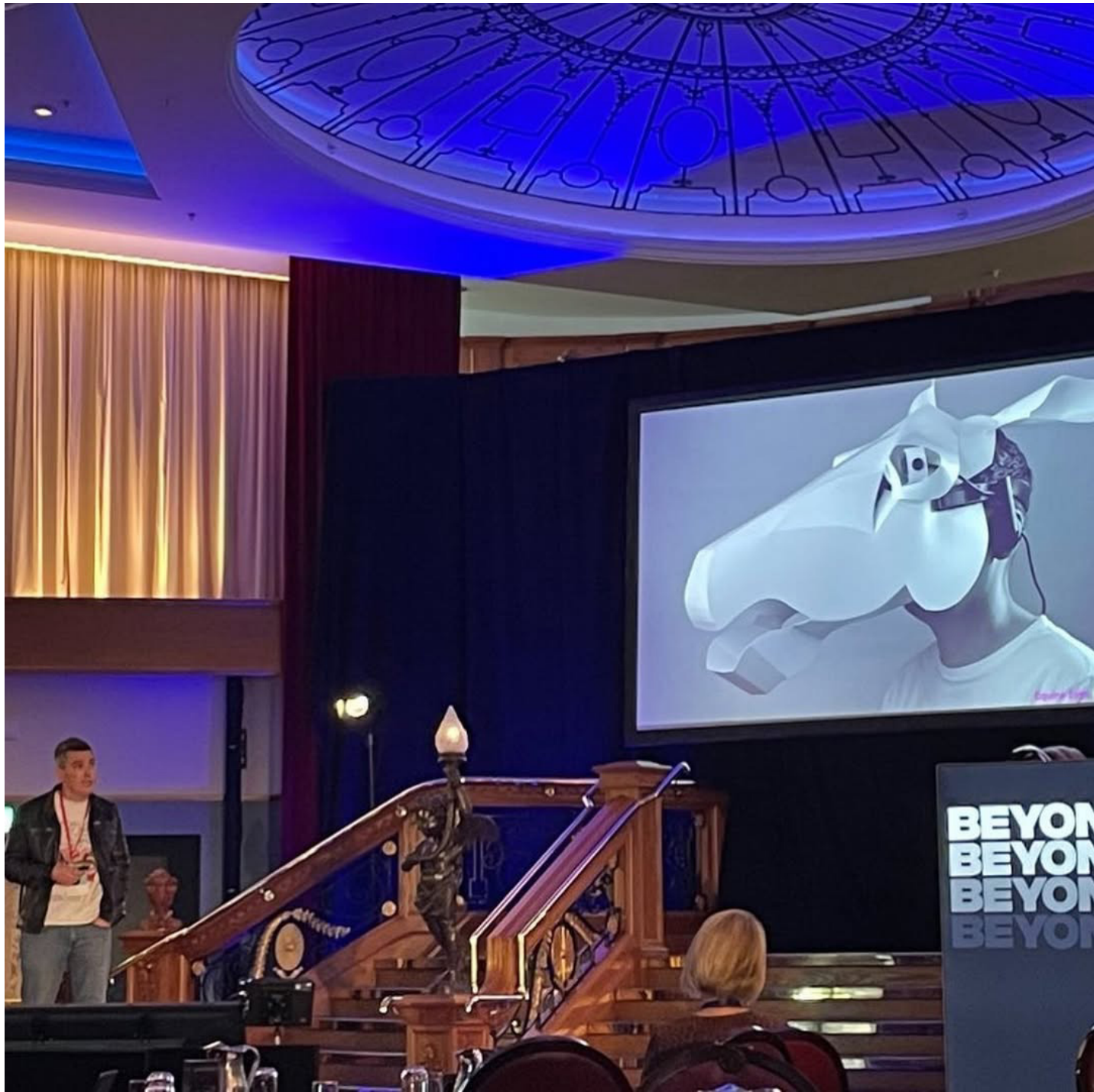
I was invited to present some of the Research at a media and technology innovation conference called Beyond. It was only a 10-minute speaking slot, right at the end of the programme, but there was exhibition and showcase space to test the new wireless headset. COVID restrictions limited the exhibition context and interactions that the audience could have, but it was good to talk through the project with 'industry' and technological evangelists – neither of whom I enjoy discussing my practice with, but the challenge of arguing for wider applications of making, outside profit, is a challenge I do always enjoy – and I got to wear a 'Britney Mic'.

09/02/24

Great morning with @thepropmakerslimited at Poli productions working on fabrication plans for the final Equine Eyes iteration. Showing in the Superpower Design Exhibition In @cidgrandhornu supported by @ahrcpress IAA funding at @ulsteruni

Through the prototyping process I had built a working headset. It took in two live camera feeds from two 220 FOV cameras, into the Raspberry Pi, which stripped out the red in the YUV range, and put this live onto a HDMI screen. The technological reasoning of the design rhetoric had been honed and crafted. The character had shifted to a space I was more comfortable with, one that wasn't linked to proprietary technology, one which had a low carbon footprint, could be released as open source, and could be easily produced.

There was still feedback from users on the emotional engagement. The headset was too unstable, it took a long time and was complicated to boot, it was flimsy and they were worried it would get easily damaged. It was also hand-crafted, so each one had to be hand-cut. This meant

that the headset was precious, and delicate, two attributes that don't really encourage play.

I worked with film prop designers Poli Productions on the fabrication of a new shell. They 3D scanned the inside of the prototypes and created a slotted skeletal framework to support the physical shell. They 3D sculpted more delicate sections, and helped in the redesign of the shape to address some of the user feedback.
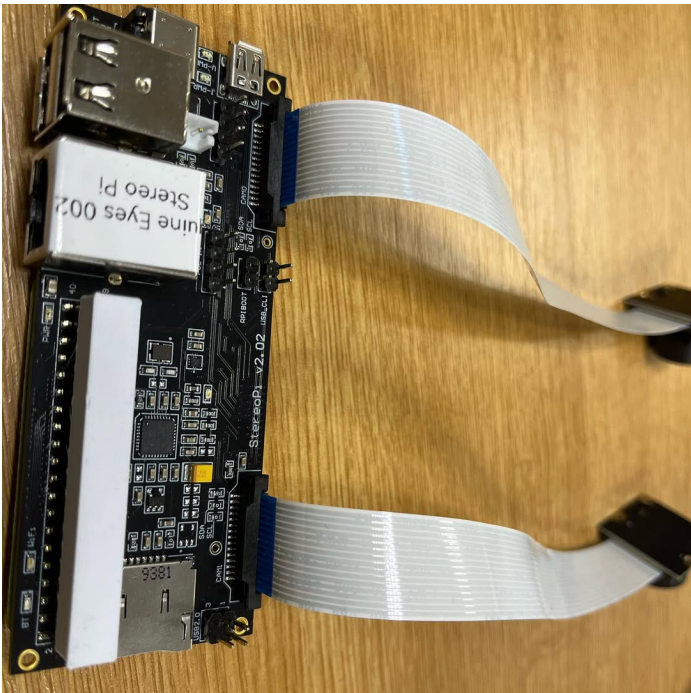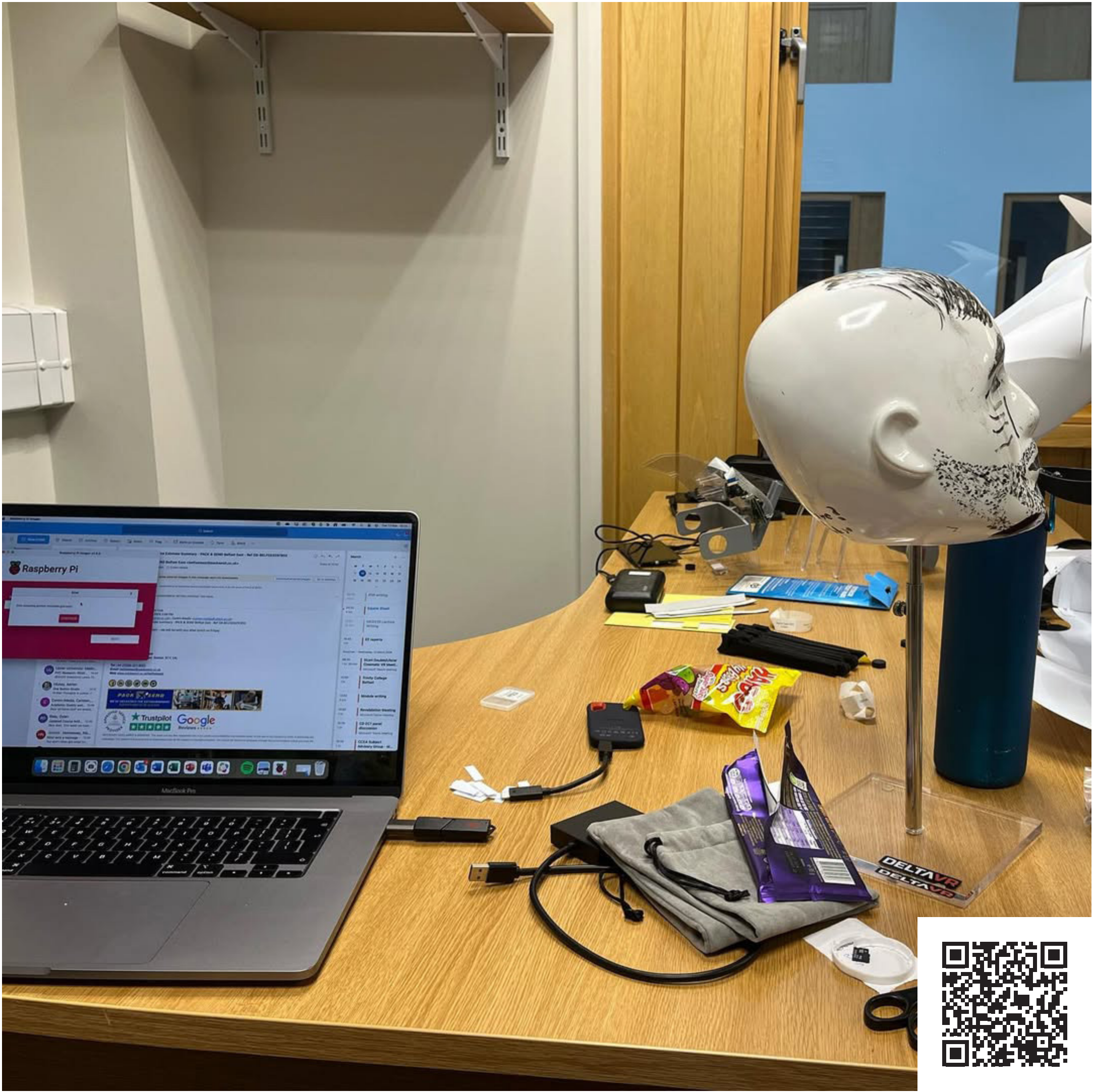
13/03/24

the final form is coming after 7 years of prototyping. I've been collaborating with @thepropmakerslimited and @tyndyll on a new piece. Developed for the Centre for Design Innovation in Belgium @cidgrandhornu. Showing as part of their Super Power Design exhibition (March-August) funded through @ulsteruni @ahrcpress Impact funding. I don't want to share what it finally looks like until the show opens, but I've been working with @vlatko_mitashev (assisted by @oneillscaptures) on some promo shots that I'll share soon.
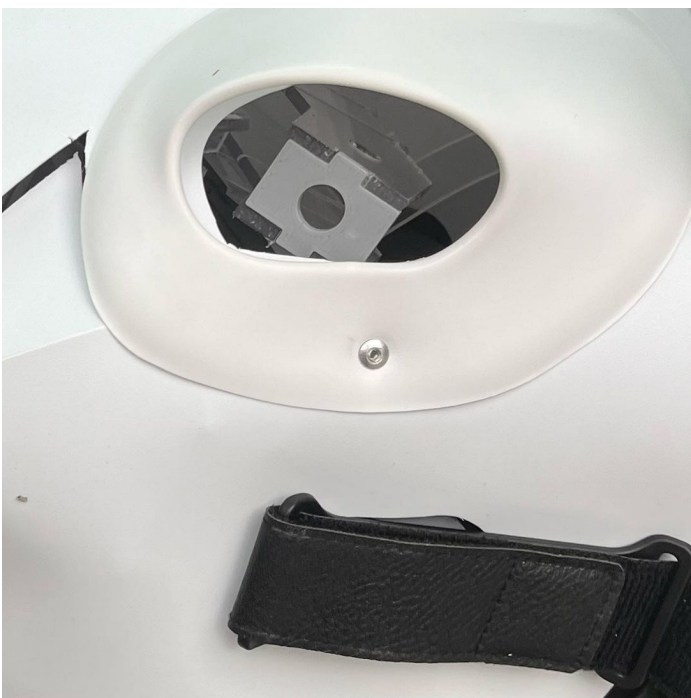
I was invited by Curator Benjamin Stoz to showcase the project in an exhibition of Speculative Design in the Centre for Innovation in Design, in Hornu, Belgium. This meant turning the final prototypes into an exhibitable piece for the Museum. The exhibition allowed me to work out the best display context and how the piece could be used by audiences.

The final stages of design meant that the work needed to boot automatically so that there were no additional set up and install needs. I worked with Simon Hewitt, a software engineer and tinkerer, on the boot sequences and imagining. This meant that the code base for the headset could be openly released in code repositories.

Simon is a huge dog lover, and whenever we work together, he always tries to get me to make a new Canine Eyes project with him. Maybe there's space for this, and it would make me connect differently with my dog Sonny, but I think that the project would lose something because part of the excitement and intrigue for users is the position of the eyes, and the code of stereoscopic vision that horses have.

We built three headsets for the show, so that audiences could wear them together (2) and there was also a spare if one was damaged in the rough and tumble of playing in the museum.
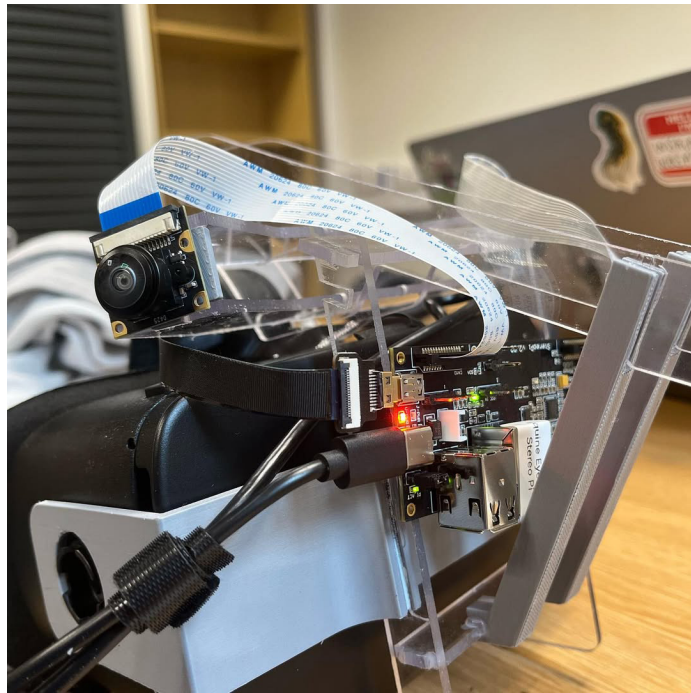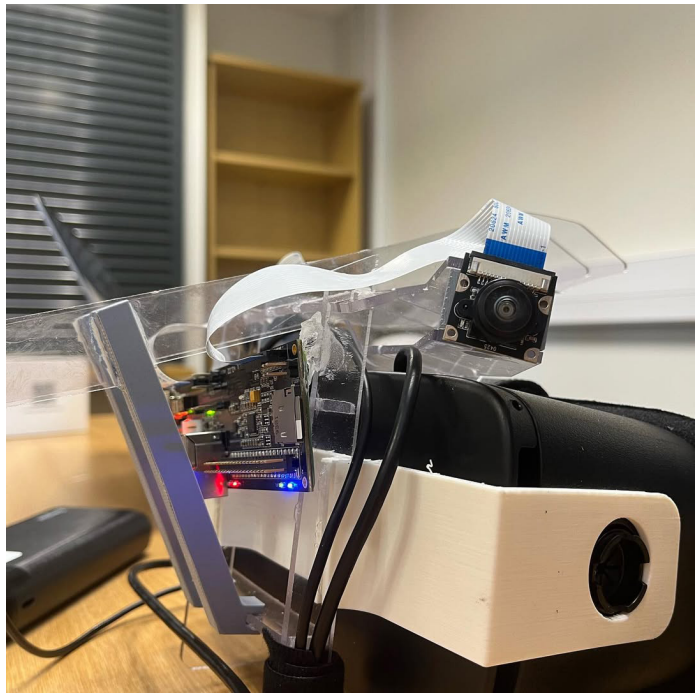
15/03/24

It's been a tough few months, a tougher few weeks, and this morning I thought I was shipping 3 heads that didn't work, but got it rebuilt, working, tested, packed and ready 51 minutes before the van showed up.

It's been 16 years since the paraflows exhibition when I last had to work like this, and it was a lot easier in my 20's. Got it done and shipped. Hope you enjoy the show Belgium see you in a couple of months.

There was a large number of issues with the final build, and deploying the image properly across three headsets. I have never worked quite so hard in my life to pull together the headsets for the show, and made myself sick with stress.

The project was finished and shipped.

I had booked a big family holiday for my wife's 40th birthday, where we went to Florida for two weeks. We flew out the same day as the show opened, so I didn't have an opportunity to do the installs and control the display of the work on the ground, but worked with the museum remotely to help design the display and exhibition context.
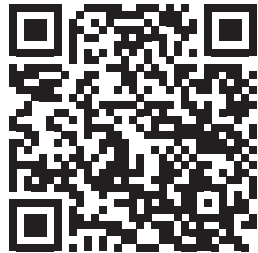
21/03/24

Equine Eyes (2024)
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The headset explores approaches to build Interspecies empathy through Speculative Design and play. The project probes how we might form new types of kinships with non-human animals.

I collaborated with @benjamin_stoz, @thepropmakerslimited and @tyndyll on a ground up rebuild so that it is completely wireless, mobile and robust enough for people to wear.

I've been prototyping this project on and off for about 7 years and the final piece will be shown this week in the Centre for Design Innovation in Belgium. The work will be on show (and wearable) as part of their SUPERPOWER DESIGN.
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Photography by @vlatko_mitashev, assisted by @oneillscaptures.

27/03/24

Equine Eyes (2024) on show at the @cidgrandhornu in Belgium - lovely to see visitors playing with the work.

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Photos by @jasnarok

While I took some much needed rest and family time in the sun, the show opened in Belgium. Other designers from the show messaged photos and video of the opening and audiences trying the work. It was really moving to watch and see public audiences experience the work in the way I intended.

I was very emotional when I saw the work being used.

The Equine Eyes project was the last piece in the show, and visitors moved through a history of human body augmentation, looking at designs in cabinets and on plinths. At the end of the show were two rooms of Speculative Design artifacts, all presented on plinths with short explainer videos.

The last piece in the curatorial path was an open space, and the museum had hired a facilitator who helps audiences put on the headsets, chats to them about the project, and then facilitates a playful experience in the space for the audiences. They ask the users to walk around, navigate towards them, try and walk towards each other. The experience isn't time bound, and audiences can spend as little or as long as they like in the headset playing with the work, discussing it with staff and each other.

25/06/24

I've used the first two days of Annual Leave to try and get a good block of writing done on my PhD. It's not complicated writing, and there's no way I could manage 3,000 words in two days if it were, but making good progress! I'll swing back in mid-July to get this tidied up.
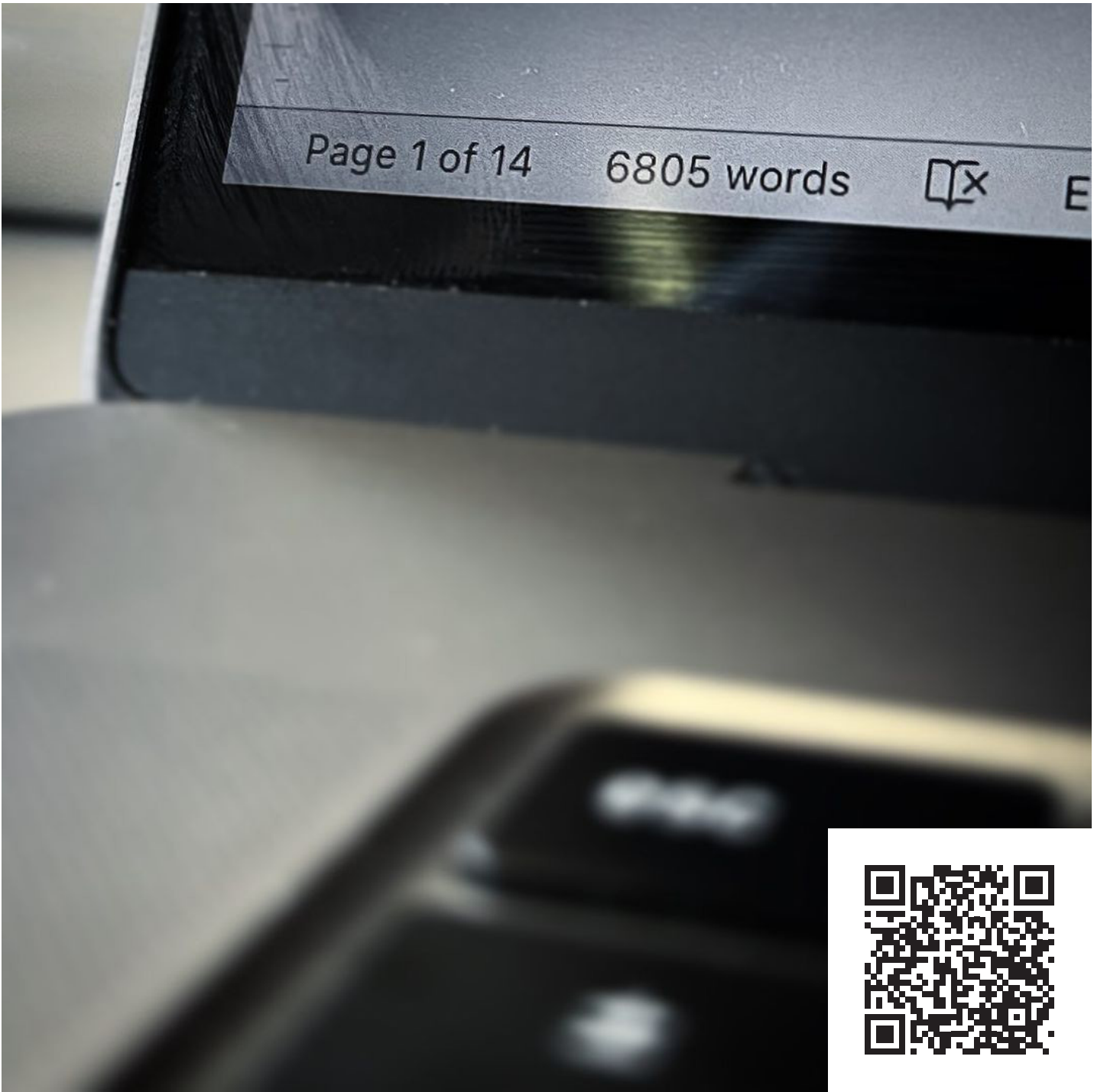

In June, I started the final sections of the PhD, writing up the final sections of the methodology. The thesis has undergone several complete overhauls and cycles of feedback since then, but all of the pieces were in place for the final write-up.

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04/07/24

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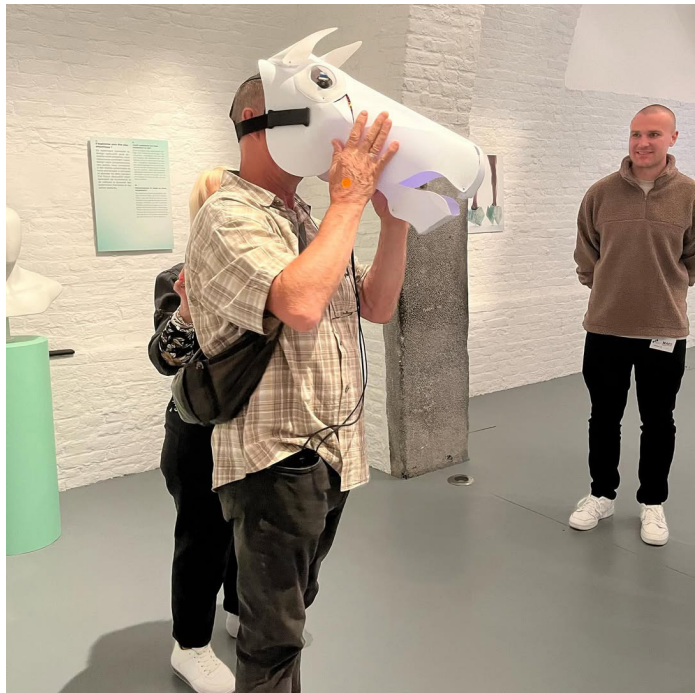*It's cheating, because they're "easy words" but I'll take 'em.*

In July, I was invited out to the museum to discuss the work, capture the display contexts, and run some demos and a workshop for visitors. I travelled slowly from the north coast of Northern Ireland, down to Belfast, to Amsterdam, and then across Europe by train. This afforded me lots of writing time to catalogue the stages of prototyping and move work from the public research journal into a shape that could work for submission and assessment.
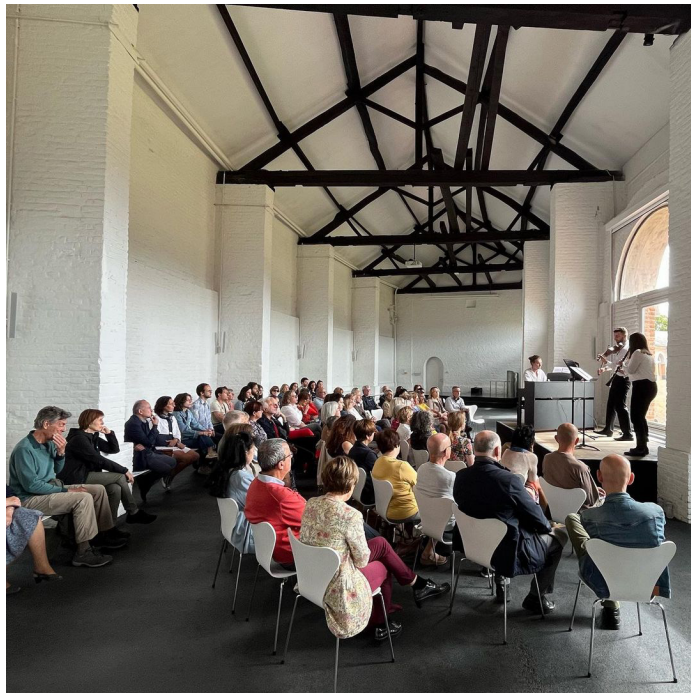
05/07/24

Very emotional, and feel privileged, to see the public be able to try the *Equine Eyes* project for the first time in the @cidgrandhornu in Hornu, Belgium.

Here with @motivepeak documenting the work and the show for @ulsteruni Impact Accelerator Account from the @ahrcpress.

07/07/24

Today I demoed work for the public at a classical concert in @cidgrandhornu to capture audience responses. I think we also caught a user proclaiming "ooh la la" when they put it on.