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Illuminating Innovation



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Professor Sarah Atkinson PhD

Professor of Screen Media
Department of Culture, Media & Creative Industries
Faculty of Arts & Humanities
King's College London

Welcome to GLOW: Illuminating innovation

This exhibition is the result of my Arts & Humanities Research Council (AHRC) Research Development & Engagement Fellowship

My GLOW journey began in March 2022 when I started to put together the fellowship funding application, which had been inspired by a book project: 'Mixed Realities: Gender & Emergent Media' that I had written with my collaborator from the University of Southern California, Vicki Callahan (due to be published in Spring 2025).

Over the course of six-years, Vicki and I interviewed 140 women, non-binary and trans individuals working at the vanguard of digital creativity from over 17 countries. They represented a diverse range of backgrounds, ages, areas of expertise and career durations.

What these individuals had in common was their position at the cutting-edges of innovation and experimentation, and most importantly always blazing a trail for others to follow. Sadly, the brilliance of these individuals has often been hidden; obscured, unrecognised, and uncelebrated. Many of their contributions to invention, innovation, and creativity have been overlooked, their guiding light completely obscured.

I was inspired by their incredible courage, resilience, and ingenuity, particularly in the face of such lack of acknowledgement and often in the absence of investment, funding, or reward. It was their contributions to the fields of creativity and technological innovation that I sought to capture, celebrate, and advance through this exhibition, so that you might experience that same sense

of inspiration, so that you too could be illuminated – both sensorially and cerebrally!

Some of those trailblazing interviewees are represented in this exhibition alongside the work of four selected artists who have been developed through a six-month long programme of technological and creative exploration and experimentation.

This is the first opportunity for these four artists to showcase the outcomes of this programme. All of them intend these works to continue to evolve and I urge you to follow these exciting, brave, ingenious, and inspiring individuals. Their collective light is dazzling.

Of course, there are many more who are not represented here and I would urge you to continue to seek out these shaded or hidden contributions, and where you find them, do all you can to share and illuminate them for others.

This is the first time I have curated an exhibition as part of a commitment to take the research forward in a form that could reach new audiences. This journey has opened new and unexpected avenues for interdisciplinary research through my collaboration with a diverse range of King's researchers and departments. It's been a wonderful learning experience, which wouldn't have been possible without the incredible support that I have received from my amazing colleagues at King's, particularly from King's Culture, King's Digital Lab, and the Faculty of Arts & Humanities. I feel so privileged to have received such dedicated support from so many.

I invite you to enjoy GLOW and all that it has to offer!

GLOW 3.0 Overview

The GLOW: Illuminating Innovation exhibition is one of the outcomes of the AHRC funded Research, Development & Engagement fellowship led by Professor Sarah Atkinson.

Entitled 'Global Leadership of Women in Web 3 (GLOW 3.0)' the project seeks to interrogate, understand and foreground women, non-binary and trans contributions to the conceptualisation, commercialisation and creative potential of Web 3.0 screen-based media and art.

GLOW3 responds to the promise and potential of Web 3.0, which has yet to be realised, during a critical moment of transition where the future is being shaped by public media discourse dominated by a narrow range of voices and perspectives.

The GLOW3 project is made up by three key intersecting strands of enquiry into Web 3.0 driven

screen-based media: conceptualisation, commercialisation, and creativity. The conceptual enquiry will inform new research which will deepen understandings of the concepts of the metaverse and world-building, asking critical questions such as; what does world-building mean in a global context? What role does hyperbole play in shaping new screen-based technologies and what are the contributions of women, non-binary, and trans people in shaping, influencing and leading these narratives?

The commercial dimension of Web 3.0 is built on blockchain technologies. This branch of enquiry will seek to critically examine these through specific women, non-binary and trans led initiatives, examining how these technologies have impacted upon the realities of their experiences in different global contexts and the complex implications of distributing creative output as Non-Fungible Tokens (NFTs) including upon labour practices and the environment.

The creative strand examines the affordances of the emerging media forms of Web 3.0 through an artist programme culminating in this groundbreaking hybrid, multi-sited exhibition.

Opening on International Women's Day 2024, GLOW: Illuminating Innovation brings together new and existing digital artwork from creators across the world innovating at the leading edges of emerging media using Web 3.0 technologies which fuse the physical with the digital.

To find out more about the research outcomes, visit the project website: kcl.ac.uk/research/GLOW



GLOW3 project funders:



GLOW3 project partners:



GLOW 3.0

Artist Programme

The four GLoW 3.0 artists were chosen from a competitive selection process, after an open international call for applications in June 2023 overwhelmed us with responses.

The artists embarked on the six-month GLoW 3.0 Artist Programme in September 2023 in partnership with King's Digital Lab.

The programme included two two-day in-person development workshops, a series of online sessions, as well as bespoke expert one-to-one training and support from

Lisa Gilligan-Lee, University of Nottingham



Elliott Hall and Neil Jakeman of King's Digital Lab – who have also both been heavily involved in the development of the art works as Creative Technologists.

King's Digital Lab bring extensive digital creativity expertise in 3D scanning via photogrammetry, 3D modelling via Blender and realtime engines such as Unreal and Unity.

During the first workshop in September 2023 we were hosted by Nancy Xu, a Virtual Production Producer at Epic Games Innovation Lab in London where the artists were introduced to cutting-edge virtual production technologies. These included a 'LED volume' facial capture via metahuman animators and Unreal Editor Fortnite (UEFN).

The workshop also included visits to Outernet to see the latest Pixel Artworks installation and a private tour of Gazelli Art House's GEN/GEN: Generative Generations exhibition. The works spanned six decades and featured artists who have embraced generative art throughout various periods, focussing on the intergenerational fascination with human and machine interconnections, and how this dialogue can transcend time.

This workshop enabled the artists to immerse themselves in the exhibition location and the Strand Aldwych for the first time. Inspired by the possibilities of the expanded canvas, Rebecca opted for the St Mary Le Strand church as the location for Second Nature and Violeta contemplated the external spaces where Las Awichas could digitally manifest.

At the second in-person workshop in October 2023, the artists were hosted by Professor Helen W. Kennedy and her team at the Virtual & Immersive (VIP) Studio at the University of Nottingham. The VIP studio is a research and innovation space dedicated to the critical exploration of both popular and emergent immersive technologies.

"Our studio is a place to investigate how artists, technologists and academic environments can make use of the benefits of immersive technology for practice and research and mitigate its challenges – particularly those baked in through design." Professor Helen W. Kennedy

As a specialist production facility designed to incubate innovation in film, TV and performance arts production and audience engagement, the VIP Studio was created as part of a European Regional Development Fund programme entitled Live, Experiential and Digital Diversification (LEADD:NG) a thirty month programme supporting creatives in their exploration and adoption of immersive technology.

Over the course of the two-day workshop, the GLoW 3.0 artists benefitted from exclusive access to the interdisciplinary expertise and capabilities of the VIP team which includes researchers from across arts and computer science. The artists were guided through hands on exploration and experimentation with the various technologies on offer which included Volumetric Capture, Motion Capture, Facial Performance Capture, Video Capture, Virtual Reality, Haptics, Pepper's Ghosts (Holograms) and Binaural Audio. This two-day highly participative element of the programme was particularly transformative for the artist Yarli, who was able to further workshop and evolve the Stem Cell Clinic.

Online workshops, and one-to-one sessions continued throughout the programme, overcoming the challenges of divergent time-zones which crossed UK, Australia, North America and Bolivia to ensure our artists developed and sustained a collaborative community.

The programme also encompassed the artists making connections to King's researchers and projects, from formal partnership links such as that which emerged through Rebecca's project which led to a King's Together collaboration (see pages 15 – 16) to both Violeta and Lisa working alongside the King's Engineering department in the state-of-the-art makerspaces to realise 3D prints of their other-worldly sculptures.



Supporters of the GLoW3 Artists Programme:



Yarli Allison

Stem Cell Clinic <beta>

Multimedia installation and digital experience

Creative Technologist: Elliot Hall

Yarli Allison is a Canadian-born, Hong Kongese art-worker based in the UK/ Paris with an interdisciplinary approach that traverses sculpture, installation, CGI (VR/AR/3D modelling/game), moving-images, drawings, poetry, tattooing, and performances. Allison's recent works were exhibited at Tai Kwun Contemporary Museum (HK), LINZ FMR (Austria), FACT (Liverpool), Barbican Centre (London), Institute of Contemporary Arts: ICA (London), and V&A Museum (London).



Stem Cell Clinic <beta> is a multimedia installation with a digital experience that imagines a speculative future of our city entirely made of Embryonic Stem Cells, harvested from blastocysts in the uterus. The webXR clinic (beta) can be toured on audiences' devices by scanning the map-prints on the installation wall.

"This fictional clinic serves as the first entry point of my long term research in exploring possibilities of the usage of biotech innovation that could solve gender health gap issues and heal damaged ecologies."

Based on existing research inspired by MIT's Lemon Skin Chair and an interest in the gender health and data gap, Yarli started investigating the UK's healthcare system as a departure point that builds the fictional 'stem cell city' with a new speculative social, health and economical infrastructure.

"What if women/uterus-carriers' Embryonic stem cells (ESCs) are the solution to climate change and gender inequality, that this 'raw sustainable material' becomes so desirable that it takes over the world as our primary material?"

In the world of Stem Cell City, ESCs are regulated and consented, to be used as raw materials that replace plastic, brick and metal. With new blooming industries in place, women/uterus carriers take charge of their bodies – walking into a clinic to 'fairtrade' their cells as a way toward financial independence, earning royalties to sustain a stream of income for whichever product it induced.

This new system will release them from their traditional reproductive role and inspire people to remodel family systems since ESCs are technically possible to be programmed into eggs or sperm.

The desire for ESCs grows, as it builds our city. However, there are two sides to this coin – civic disagreement sparks when the government green-lit this seemingly utopian industry, facing



classic ethics and moral question on embryos – what makes human, human? Moreover, how would men/non-uterus-carriers feel, in a uterus-powered world, surrounded by a system that sides with people with uteruses, even their natural sperm is replaceable?

"My work responds to GLoW3 by touching on multiple dimensions of intersectional identities, existing between the border of the digital and physical realm."

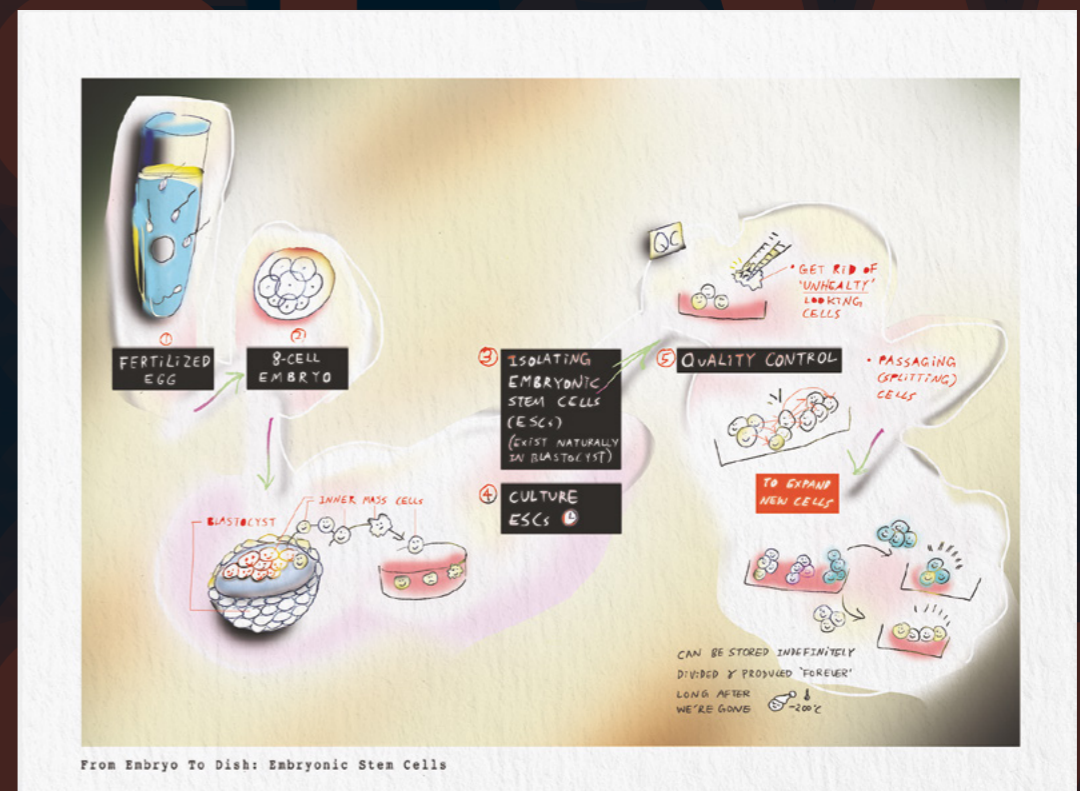
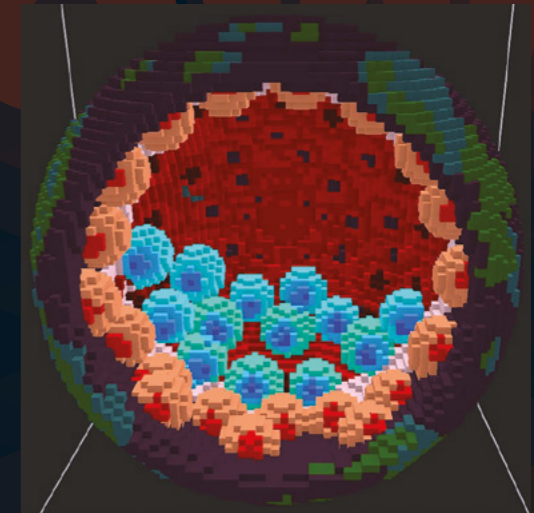
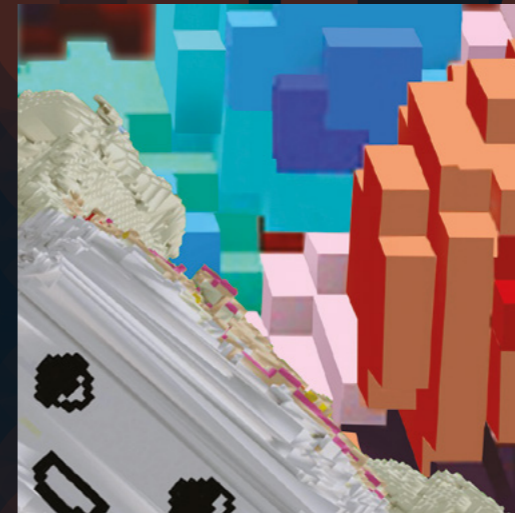
To navigate this up-side down queering world in which marginalised communities are in power, Yarli has been working with academic researchers including from King's Business School to advise on the project to ensure its verisimilitude with real-world possibilities.

"I have been working with experts in various digital humanity fields to critically think, explore, and build its infrastructure. I have consulted with a surgical nurse with a bioethics background, an ex-medic student and NGO worker, grassroots feminists, stem-cell engineers, anthropologists, in/exclusion and diorama craft master."

Coming from a sculpture and painting background, Allison emphasises hand crafted traces along with digital elements.

Audiences encounter a stem cell clinic diorama with a bone plinth that was 3D printed and casted; a Lunar lantern featuring a mascot "Verty" who is the clinic's tour guide; maps, flowcharts, and prints based on hand drawn elements that are then virtually translated into the webXR clinic tour.

Combining the 90s pixel and voxel aesthetics as building blocks for the clinic tour mini game, Allison pays tribute to the open-source era of the early internet in East Asia which emphasises transparency, community collaboration and accessibility.

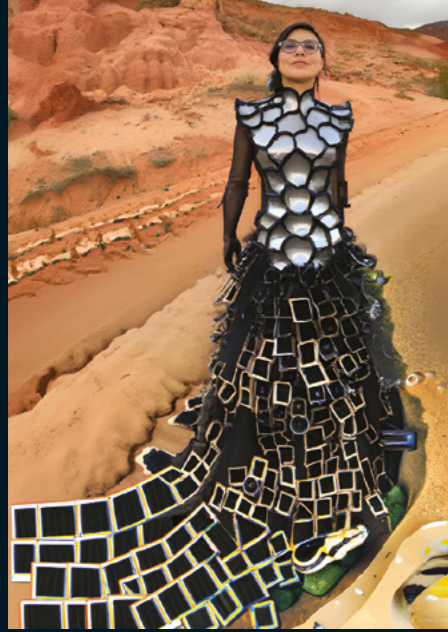


Violeta Ayala

Las Awichas

Portraits, Augmented Reality and Acrylic sculptures

Creative Technologist: Violeta Ayala; Developers: Brian Chung & Violeta Ayala; 3D Artists: Brian Condori Marza & Neil Jakeman; Animator: Brian Condori Marza; Production Designer: Dan Fallshaw; Artist (Tullmas): Alicia Hinojosa Sanchez; 3D Printed Models: Neil Jakeman & Media Makers Lab; Sound and Music: Dan Fallshaw, Roly Elias, Violeta Ayala; Tech Support: Elliott Hall; Las Awichas XR is a co-production of KCL and unitednotions.film



"Las Awichas represents my personal journey to dignify my ancestral women, particularly my great-grandmother, a descendant from the foundational lineage of Abya Yala, known today as 'America.' Despite dating back 23,000 years, her narrative remains largely untold. Las Awichas is an interrogation of memory."

Violeta Ayala is an interdisciplinary creator across film, tech, writing, and art. As a co-founder of unitednotions.film and koa.xyz, Ayala has driven innovative, award-winning projects like Prison X, featured at Sundance and Cannes. In 2020 she became the first Quechua member of the Academy of Motion Picture Arts and Sciences. Ayala currently uses syntography, spatial computing, algorithmic art, and AI model training to re-imagine film.

Las Awichas immerses viewers in an interactive experience, its physicality is a dance of contrasts—acrylic-printed portraits of AI-generated grandmothers, 3D printed animal robots inspired by Nazca lines and knitted pop-culture pieces, connecting ancestral Quechua systems through Augmented Reality (AR).

The Quechua are the largest living indigenous culture of the Americas. Their cyclical concept of time is central to Las Awichas which acknowledges the coexistence of different narratives and histories within a single space or identity. This 'phygital' (physical/digital) experience challenges Western notions of photography and film as mere factual representations. Can technology become a tool to reframe cultural narratives with dignity and nuance? Las Awichas weaves lost narratives by bringing the past into the present where reality and illusion intertwine.

"AI has granted me unique tools to fill colonisation's gaps, serving as resistance and restoring dignity. In 2022, I repurposed AI to weave ancestral memories by creating digital portraits of my matriarchs."

The creation of Las Awichas within the metaverse is an example of a transition towards non-extractive ethos of worldbuilding. This ethos has imprinted in its DNA, ancestral memory, a deep connection with the land and the people who inhabit it. Already leveraging the potential of Web 3.0 and blockchain tech, like NFTs, Las Awichas opens new creative possibilities for communities.

"In Las Awichas, I advocate for decentralizing networks and democratizing AI. I regard community access, ownership, and transparency of data collection of AI models as fundamental rights."

The hybrid exhibition format of 'Las Awichas' dismantles geographic and cultural barriers to forge a shared yet personal experience reflecting indigenous women's aesthetics, practices, and ethics in virtual worlds.

Audiences engage both physically and digitally. The installation links eight acrylic-printed AI-generated

portraits to respective 3D printed robotic animals. Each creature, from the jaguar to the hummingbird, from the gecko to the llama, is a node within a larger ecosystem of meaning, a part of a whole, that is the evolving cultures of the Andes. Hanging side by side with "las tullmas," each pair of "tullma" represents an Andean chola.

"We created them in a community effort, featuring an explosion of colours followed by a monochromatic pattern and pop-culture items like emojis and gadgets found in the markets in Cochabamba. My culture isn't static; it's in evolution"

An interactive tablet invites further interaction, with stories woven into its interface such that a glance, touch, or gesture blurs the line between spectator and storyteller.

The installation also spills out into the adjacent building of The Arcade, where an external portrait becomes a portal into film futurism. Through a phone or a tablet, the robotic animals leap into our world.

Las Awichas represents the dawn of a new era in physical cinema. One where flat screens are replaced by multidimensional narratives that invite active participation. This living cinema echoes the Quechua's cyclical worldview – blending past, present, and future as stories come alive. Just as Ayala reframes ancestral perspectives, this installation reimagines narratives as an act of co-creation, resistance, and collective construction of memory.



Lisa Jamhoury

L'Entree (The Opening)

Augmented Reality and Acrylic sculptures

Concept, artistic direction, production. Augmented Reality design and development. Audio concept and script. Motion capture and animation: Lisa Jamhoury; Choreography, performance Hybrid Movement Company; Françoise Voranger, Andrea Nikki Ortiz; Sound and music: Matt McCorkle; Dramaturg: Emily Reilly; Voice: Emily Reilly; 3D Modeling: Woraya Boonyapanachoti, Guðjón Örn Lárusson, Huascar Acosta, Neil Jakeman; Unreal Engine development: Lisa Jamhoury, Matt Roméin; Augmented Reality testing: Elliott Hall; Photogrammetry: NYCAP3D; Special thanks: Becky Schutt, Christopher Strawley; Supporters: NEW INC / New Museum, Onassis ONX Studio King's Engineering Makerspace Lab

Lisa Jamhoury is a Lebanese-American movement artist and programmer creating embodied, computational experiences. Rooted in contemporary circus and mindfulness, her practice includes interactive performances, installations, and websites that encourage a consensual, celebratory approach to humanity's shared physicality. As an aerial acrobat, Lisa has choreographed and performed across the United States, including commissioned work for the Streb Lab for Action Mechanics and TEDx Brooklyn. Her computational work has been recognized by Ars Electronica, Meta Open Arts, Contemporary Art Society, Google xStory, New Museum, among others. Lisa is currently a member at Onassis ONX Studio and NEW INC. She is an adjunct arts professor at New York University's Interactive Telecommunications Program (ITP), where she completed her masters degree.



Amid the global migration between physical and virtual worlds, L'Entrée (The Opening) delves into the desire to capture, understand, and keep unchanged the vital human body. Equal parts audio poem, 3D-printed sculpture exhibition, and augmented reality (AR) experience, L'Entrée reveals a series of virtual sculptures

situated in centuries of human movement along the pedestrianized area of Strand/Aldwych. The sculptures, created in a gaming engine with photogrammetry, motion capture, and computational averaging, each perform a virtual "dance" immersing viewers in their unique forms as spatial sound pulls listeners between the tangible streets of London and the intangible world of Web3/XR technologies, ultimately begging the question: what is the purpose of the human body in an increasingly virtual existence?

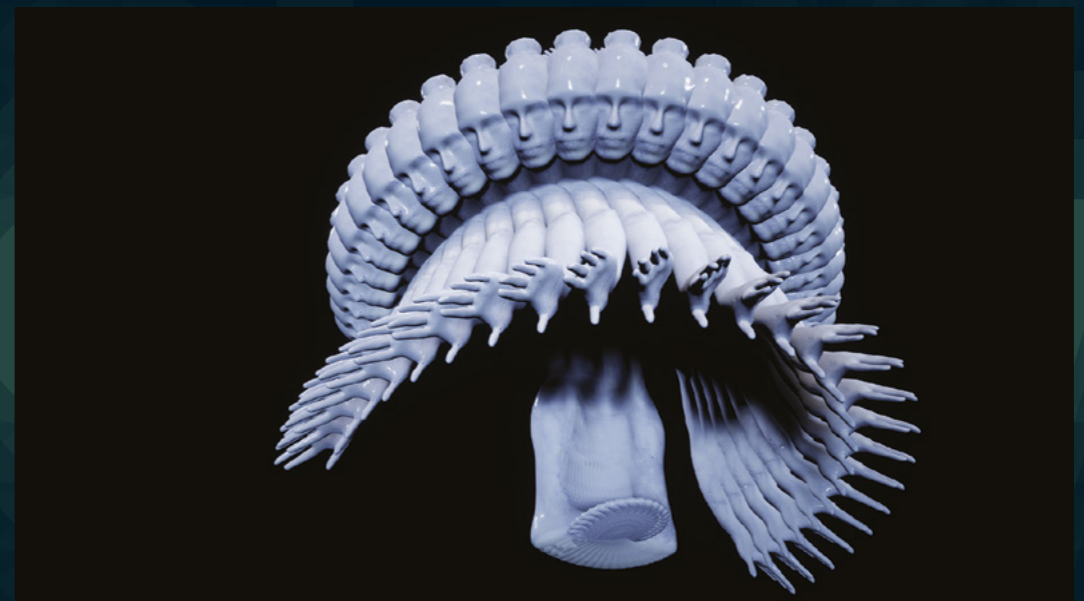
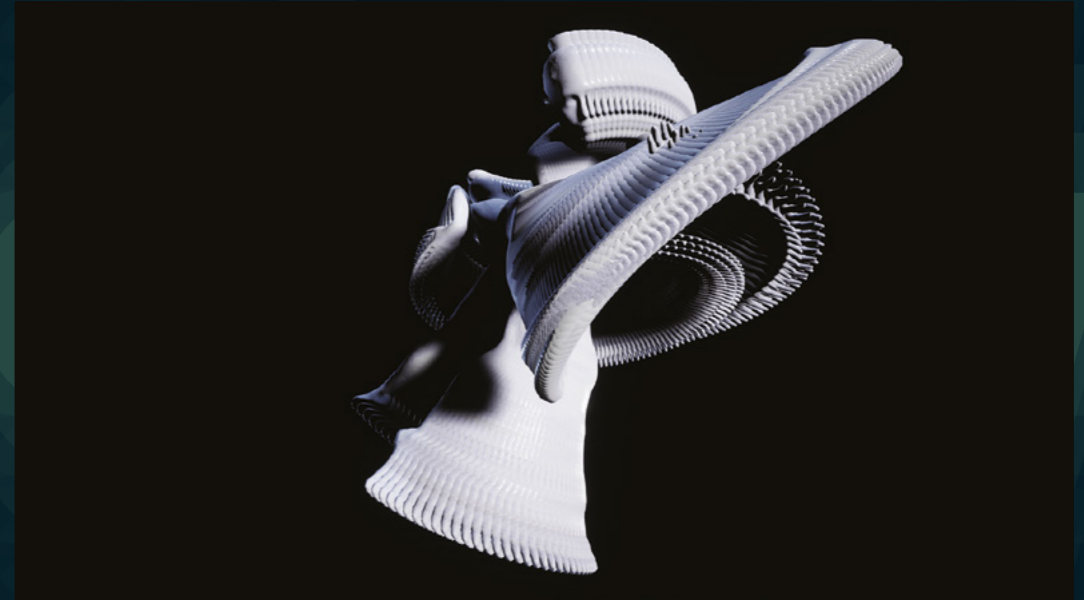
L'Entrée is inspired by the deep historical relationship of art and technology pushing each other forward, which can be witnessed in the creative tradition of reverence for the human body and a desire to capture its vitality. In particular, French contemporaries, sculptor Auguste Rodin and scientist and physiologist Étienne-Jules Marey inspire this project: the former with his masterful captures of movement in a still artifact, and the latter by harnessing his era's cutting-edge technology to capture the body in motion. L'Entrée presents a novel approach to this tradition by combining three state-of-the-art technologies – motion capture, photogrammetry, and a gaming engine – to create movement-inspired sculpture.

The sculptures featured in L'Entrée are created with motion capture data collected during a contemporary circus duet performed by Françoise Voranger and Andrea Nicole Ortiz of Hybrid Movement Company, which marries ballet, circus, martial arts, yoga asana, and b-boying to create a unique movement style. The motion capture recordings from the two performers are averaged together in the gaming engine, Unreal Engine, at various blend weights across multiple avatars. The avatars are combined in Unreal, then exported for refinement in Blender before being 3D printed and imported



into the AR experience. The 3D models used in the gaming engine are created by averaging high-end photogrammetry scans of the two performers into one form.

The technical process of capturing the body, whether with today's cutting edge technology or clay dating back millennia, brings into focus society's ideals of representation of gender, race, and ability. In this vein, L'Entrée is deeply inspired by Norma, a 1940s statue created by gynecologist Robert Dickinson modeled from the averaged measurements from 15,000 white women aged 21–25. At the time, Norma's "model body" was featured on the cover of TIME magazine, in doctors offices and medical schools, and through a "perfect body" competition. Norma's message to American women was clear: If you aren't young, white, and "average," something is wrong. In contrast to Norma, L'Entrée spotlights two strong, bold female bodies that are anything but average. The choreography is based around an intimate female-female duet, which is a deliberate affront to the typical male-female pas de deux idealized in classical ballet. An intentional subversion of the over-sexualized representation of women purported by the majority of gaming content, L'Entrée intentionally places two professional female performers with bold, strong bodies in Unreal Engine and represents them with empowering materials and shapes.



L'Entree no. 1 mesh_16_306
L'Entree no. 2 mesh_71_286
L'Entree no. 3 mesh_26_194

Rebecca Smith

Second Nature

Volumetric Lighting and Immersive Audio Installation

Sound Design: CJ Mirra; Production: Sterling Events Group

Open 10am – 10pm, 11 – 13 March 2024

Rebecca Smith, an artist practicing under the name Urban Projections, has been drawing lines between the natural world, art and technology for over 20 years. Smith's practice centers around the natural environment and our place within it, aiming to reaffirm our connection to nature and each other. Often through the creation of large-scale immersive experiences, Smith has developed innovative methods for cross genre experimentation.



Second Nature is a Volumetric Lighting and Immersive Audio Installation situated inside the St Mary le Strand church* on Strand Aldwych, which is surrounded by environmental sensor stations. The installation draws directly from the real-time data generated by these many sensors, mirroring invisible entanglements with the surrounding climate, including temperature, air quality, humidity, signal pollution and wind. This stream of unobservable data is used to sculpt an exquisite, visual aesthetic of abstract visualisations, inspired by systems of nature.

Colours, movement, speed, position, and complexity are all informed from large swaths of live data exchange. By taking information that is invisible to the human eye and presenting it in a way that seamlessly overlays with the public realm, the audience are invited to explore a dynamic perception of space, and to critically engage with issues of climate change and the environment.

Second Nature explores issues surrounding the democratisation of data and information through Web 3.0 technologies. The data used for the project is open-source and freely available in the public domain through King's College London.

"I am interested in interrogating our understanding of the surrounding environment and the unforeseen dialogues that happen on a daily basis between people, place and the natural world. I am exploring how, in the shadow of the looming climate crisis, we can use digital technologies to meaningfully question and critique the intricate relationships between technology, environment and the human-centred perspective."

Historic data sets are woven into the work, exploring the changing environment from the 1880's to the present day. Long term predicted forecasts of climate trends further examine a narrative of shifting challenges presented by the Anthropocene and our interdependence on non-human species.

"Working with data from an urban environment has been a really interesting process. Like many people, I have often thought that numbers and big data sets are confusing and not for me. But there's a real beauty in the patterns that they create and the narratives that they tell. I'm interested in how we can experience and meaningfully connect with this"

The work uses volumetric light to create evolving structures through the space. The ephemeral architecture formed by the light, twists and contorts as an array of lighting fixtures rotate, pan and adapt to the streams of environmental change. This is accompanied by an immersive spatial audio experience, designed to dynamically alter states with the real-time data. The transitory nature of the 3D space creates

a unique moment for audience reflection and contemplation.

"I think that the work echoes the order and chaos of our relationship with the natural world. There are moments of clarity where the two converge to create beautiful, synchronised passages. Then there are junctures in which one consumes the other. In my collaboration with the data, I hope that I can help audiences to emotionally connect with the science that charts our effect on the world around us"

*St Mary Le Strand Church, built in 1714–21, is a Grade 1 listed building currently undergoing a large-scale conservation and restoration project – The Jewel in the Strand – funded by the National Lottery Heritage Fund.



King's Together: Engaging audiences in climate change through immersive experiences

By connecting the three separate research endeavours together, the collective aim is to achieve the following:

To communicate complex data and evidence around environmental issues to a diverse and public audience – raising the profile of environmental monitoring is critical to ensure that investments in this area provide the evidence base needed for effective and efficient transitions to manage climate emergencies.

To implement novel immersive sound technologies in large-scale collective creative experiences – as the global demand for UK creative content is growing, innovations that will transform immersive technologies are identified as being of strategic importance.

To improve gender diverse participation in the creative digital sector – despite the UK's wealth of advanced digital technological advancements, there remain stark inequalities which need urgently addressing for this sector to flourish as an accessible and inclusive domain.

During the research and development process of Second Nature, Smith was introduced to King's researchers from Physical & Environmental Geography working on the Strand Aldwych environmental monitoring project and to Digital Signal Processing researchers leading advancements in immersive spatialised audio.

These encounters led to the award of a King's Together grant that facilitates a novel three-way interdisciplinary collaboration between GLoW 3.0, ReSET (Restarting Economy in Support of Environment, through Technology led by Professor Mark Mulligan in the Geography Department), and CIAT (Challenges in Immersive Audio Technologies led by Professor Zoran Cvetkovic in the Engineering Department). The award has enabled the ambitious realisation of Second Nature in St Mary Le Strand Church on the Strand Campus.



Restarting economy in Support of Environment, through Technology (ReSET)

Professor Mark Mulligan

Supported by Horizon2020 and focused on Future and Emerging Technologies in Environmental Intelligence, ReSET established the Strand Aldwych air and noise pollution monitoring scheme and the FreeStation monitoring network. In partnership with King's College London Estates and Sustainability Teams and Westminster City Council, air and noise pollution monitors were installed on roofs and at street level throughout the Strand-Aldwych area in May 2021 to better understand the environmental impact of the Strand Aldwych Pedestrianisation Project.

The FreeStation network comprises 22 monitors in an area less than one-hectare, making it one

of the densest networks of pollution sensors in the world.

The monitors are positioned on the rooftop of buildings in King's Strand campus, as well as around posts and gates in the local area. The network also consists of traffic and pedestrian counters to understand the traffic flow in the area, and weather stations to understand airflow.

The project is monitoring vehicle exhaust particulates and gaseous pollutants to better understand the impact of the pedestrianisation project on noise and air pollution. The data collected allows researchers to compare street level pollution on the Strand and Aldwych before, during and after pedestrianisation, relative to background levels measured throughout the period at roof level. Early data shows that there is a substantial reduction in local noise



and particulate pollution levels on the Strand and only a slight increase on the Aldwych, relative to background levels. The Strand and Aldwych continue to be affected by London-wide air pollution especially during warm, dry periods but nevertheless the Strand is significantly less polluted and noisy than prior to the Pedestrianisation project.

The FreeStation network forms the crucial foundation for the generation of the live environmental data essential to the realisation of the Second Nature installation.



Challenges in Immersive Audio Technologies (CIAT)

Professor Zoran Cvetkovic

Funded by a £3.15 million EPSRC grant, CIAT addresses long-standing fundamental challenges that need to be overcome to enable striking immersive experiences in which a group of listeners can just walk into a scene and feel transported to an alternate reality to enjoy a seamless shared experience

without the need for headphones, head-tracking, personalisation, or calibration.

By addressing these challenges, CIAT will enable the creation and delivery of shared interactive immersive audio experiences for emerging immersive applications, whilst making a step advance in the quality of immersive audio in traditional media.

The CIAT researchers have already developed three novel immersive sound technologies: Perceptual Sound Field Reconstruction (PSR) – a scalable multichannel framework enabling immersive sound environments for larger scale audiences; the Scattering Delay Network (SDN) –

a methodology for real time simulation of virtual acoustic environments; and Optimal Source Distribution (OSD) – a loudspeaker array technology enabling stable rendering of binaural sounds to multiple listeners.

The technologies have been deployed in an award-winning Sharp soundbar and used for content creation in public installations and performances at foremost institutions and festivals including the National Gallery, RADA, V&A, Click Festival, Christie's, WOMAD Festival, and the Royal Society Summer. The Second Nature collaboration provides a unique context for the technologies to be applied and tested in a large-scale church environment and to further advance the aims of the CIAT project. That is to address the ongoing challenges of: Delivering immersive audio to multiple listeners using a small number of loudspeakers; Delivering 3D sound in a variety of spaces including museums, galleries and heritage sites in a practical-scalable way; and using real-time rendering of room acoustics needed to transport listeners to an alternate reality.

Second Nature provides the ideal test bed for these explorations.

Virtual Legacies in focus

The inclusion of a selection of 'legacy artworks' was inspired and based on the research undertaken for 'Mixed Realities: Gender and Emergent Media' by Sarah Atkinson & Vicki Callahan (To be published by Wayne State University Press, Spring 2025.)

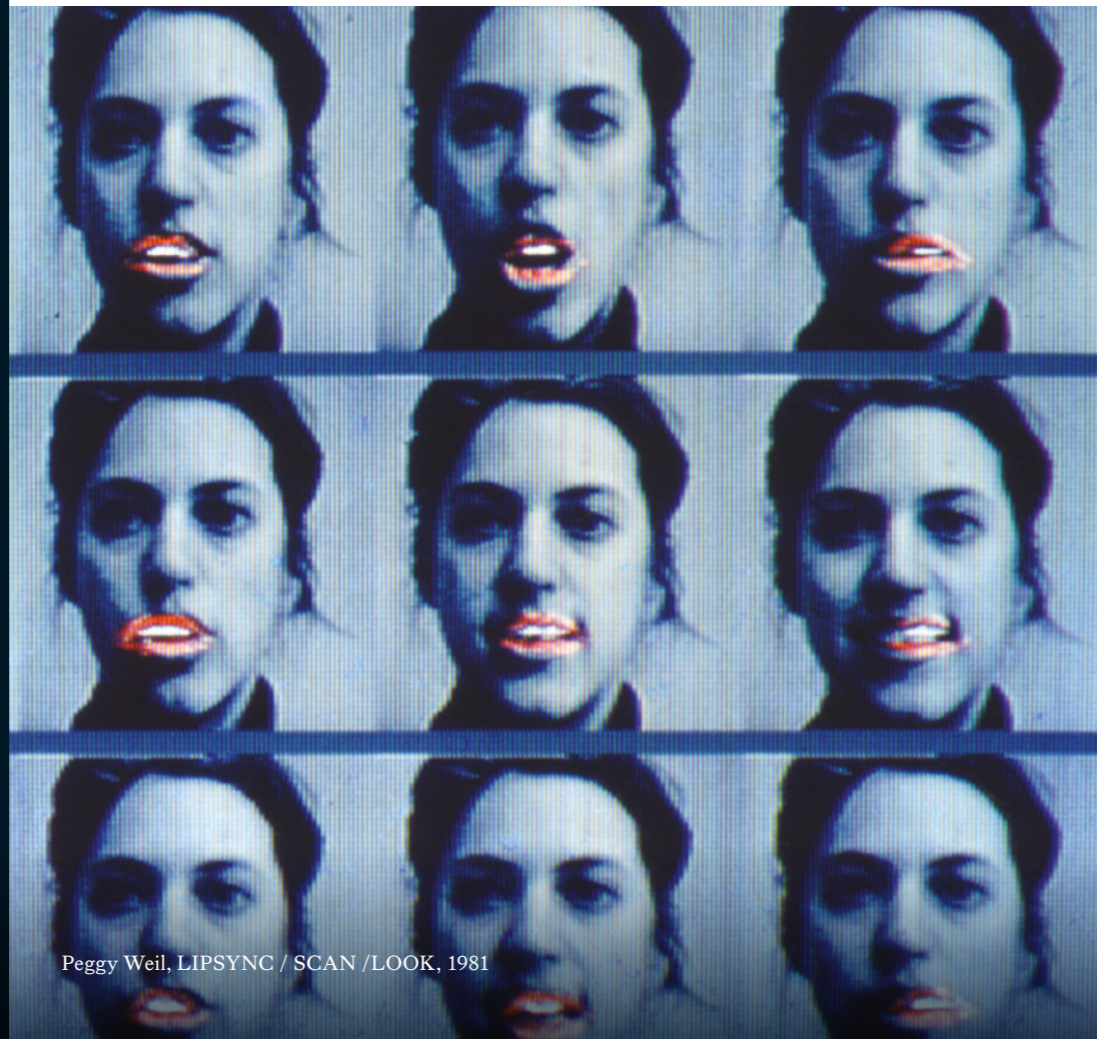
Through the exploration of recently excavated media histories, such as those into early film production and computer programming, a recurring pattern unfolds, revealing how women's stories tend to fade into obscurity during the commercialisation or professionalisation of new technologies, with male "pioneers" dominating these narratives.

In this exhibition, we bring forward compelling stories discovered in our research for Mixed Realities, presenting four digital artworks in The Arcade, alongside documentation of their production, including immersive audio-visual artefacts, in The Curiosity Cabinet. These exhibits collectively showcase the transformative work of ten key emergent media innovators: Rebecca Allen, Donna Cox, Nonny de la Peña, Toni Dove, Claudia Hart, Margaret Minsky, Ellen Sandor, Nicole Stenger, Tamiko Thiel, and Peggy Weil.

Toni Dove, Claudia Hart, Margaret Minsky, Ellen Sandor, Nicole Stenger, Tamiko Thiel, and Peggy Weil.

These exhibits act as portals into the extraordinary and expansive careers of each individual, spanning over 50 years of innovation. From early AI explorations in the 1980s to virtual world creation in the 2000s, to portable VR in the 2010s, these works, artefacts, and objects encapsulate the evolution of digital creativity.

Each of the four pieces in The Arcade signifies a significant breakthrough in the world of digital creativity and virtual art, serving as either the first or one of the earliest examples. From the 3D animation of the first computational female figure by Rebecca Allen; to the first demonstrations of CGI real-time speech by Peggy Weil; to the advancement of creative computer design and virtual world creation by Tamiko Thiel through to the introduction of mobile VR technology by Nonny de la Peña, these exhibits showcase the leading proponents of these fields.



Peggy Weil, LIPSYNC / SCAN / LOOK, 1981

Delve into the Curiosity Cabinet to explore artefacts behind these creations, such as prototype headsets, the 'daguerreotypes of virtual reality,' and early experiments with haptic interfaces. These tangible traces provide a glimpse into the ground-

breaking innovations and early iterations of virtual reality production.

While these examples represent just a fraction of the many discoveries and contributions that have been made, GLOW is a call to action to continue

uncovering and illuminating the work of these innovators. Join us in shining a torch for others to follow, celebrating, and recognising the invaluable contributions of women in illuminating innovation through digital creativity.

Top Image: Rebecca Allen, Swimmer, 1981

Bottom Image: Tamiko Thiel, Travels of Mariko Horo, 2006

Peggy Weil

LIPSYNC / SCAN / LOOK

1981

Peggy Weil is a multi-disciplinary artist, designer and academic whose award-winning work spans genres including digital urban signboards, Virtual Reality, apps, and games. Weil was an original member of the MIT Media Lab. Her work has been exhibited internationally including 'In Human Time,' the inaugural exhibit at The Climate Museum in NYC. '88 Cores' was featured at the United Nations for the Secretary General's address on Climate Action in 2018.

LIPSYNC / SCAN / LOOK (1981) are interactive animated portraits that were created when Weil was a member of the Architecture Machine Group at MIT Media Lab. This installation featured in GLOW reprises a set of interactive, animated digital portraits activated via keyboard text and joystick. These demonstrations were the first of their kind, giving the computer a real-time talking, expressive face utilizing a voice synthesizer, eye-tracking, and joystick as input. LIPSYNC (including a self-portrait version) speaks typed input; LOOK, a portrait of Luis Frangella animates head movement; SCAN, a portrait of Raleigh Perkins animates eye movement. Weil saw this work



as a new form of puppetry, allowing the viewer to directly manipulate the image in real-time, an early precursor to what are now referred to as 'deepfakes'.

Weil recalled the moment when the work was shown to a member of the military:

"We showed it to a Navy general who said on the basis of this, nobody will ever be able to make the order to 'push the button' based on a digital transmission alone. That was chilling."¹

Weil also collaborated with Nonny de la Peña on a groundbreaking virtual world project – Gone Gitmo (2007–2012) which was originally created in the virtual world platform Second Life. A virtual re-creation of the Guantánamo Bay prison (known colloquially as "Gitmo), the project was intended as a tool to raise awareness about the legal and moral no-man's-land, including clips from de la Peña's 2004 documentary film 'Unconstitutional' and transcripts from detainee interrogations.

From 1998 to 2014, Weil's chatbot, 'MrMind,' conducted a reverse Turing Test, The Blurring Test, asking visitors, "Can you convince me that you are human?" In 2019, Weil based the libretto for a song-cycle based on sixteen years of transcripts of conversations with MrMind. The Blurring Test: Songs of MrMind, composed and performed by VARISPEED Collective, premiered in March 2023 at Roulette Intermedium in Brooklyn, NY.

¹Interviewed by Atkinson for Mixed Realities, February 23, 2022.



Rebecca Allen

Swimmer
1981

Rebecca Allen is an internationally recognized artist working at the vanguard of digital art. She was one of the first artists to utilize the computer as an artistic tool to make art involving human motion simulation in her exploration of what it means to be human as technology redefines our sense of reality. Allen joined the Computer Graphics Lab at the New York Institute of Technology (NYIT) in 1980 and it was here that she created the first animations of the female form. A short video of only 6 seconds in duration displayed on a vertical screen is one of the first examples of computer animation of human motion and the first 3D animated female figure. It was created by Allen using one of the earliest 3D animation programs.

Allen went on to create a dancing computer generated character who played the role of St. Catherine in Twyla Tharp's 90-minute video dance piece, "The Catherine Wheel" (1982), with music by David Byrne. This is one of the first and most intricate examples of 3D computer generated human motion and the first to be aired on television. Allen



explains: "that was the first time the public saw a computer-generated character on TV – a 3d model of a character in motion, and it was shown all over Europe and the US. Though few people knew what they were seeing back then –because nothing was very well known at that point about computers and art."¹

When music video channels like MTV appeared, Allen saw this as an opportunity to create short-form video art as music videos that could be seen by a large audience. In 1986, she created the video for Kraftwerk's "Musique Non Stop" in addition to all the visual material for their album *Electric Café*. This involved the development of state-of-the-art facial animation software in order to bring the virtual mannequins of the band to life. Allen referred to her intention to create a "visual digital aesthetic" that would capture the personalities of Kraftwerk and would complement their digital sound with a new form of art using computers. It was aired frequently on MTV, VH1, and other international music video programs well into the mid-1990s, while also exhibited internationally in galleries and museums.

Allen's work is part of the permanent collection of Centre Georges Pompidou, LACMA, Whitney Museum and Museum of Modern Art NY. Another of Allens' groundbreaking works – *Myophone* – features in the *Curiosity Cabinet*.

¹Interviewed by Atkinson for *Mixed Realities*, March 25, 2022.



Tamiko Thiel

Travels of Mariko Horo

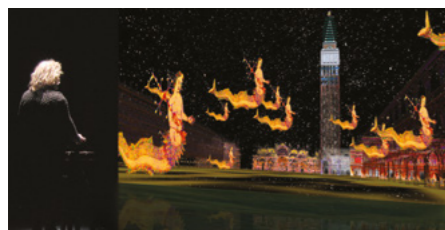
2006

Original music by Ping Jin

Tamiko Thiel is a visual artist exploring the interplay of place, space, the body and cultural identity in works encompassing an artificial intelligence (AI) supercomputer, objects, installations, digital prints in 2D and 3D, videos, interactive 3D virtual worlds (VR), augmented reality (AR) and artificial intelligence art.

Thiel has been at the forefront of virtual world creation using both VR and AR from the very first moment that it was possible to work with these mediums. She also had significant influence on computer design whilst working for the Thinking Machines Corporation from 1983 – 1985 which is documented via her inclusion in the Curiosity Cabinet – this is a lesser-known aspect of her profile and portfolio as a leading contemporary digital artist.

After leaving Thinking Machines, Thiel pursued her interest in virtual world creation made possible by the release of the OpenGL standard which enabled Virtual Reality – Real Time 3D creativity – from 1992 onwards via standard PCs as opposed to cumbersome and expensive workstations. In 1994, Thiel collaborated with Steven



Spielberg, chair of the Starbright Foundation, to create the first 3D online interactive virtual world for children. In Starbright World, the children, who were confined to hospital, could engage with one another and with Spielberg himself, as animated avatars.

In 2000, Thiel produced her first interactive large scale monoscopic VR projection – Beyond Manzanar – with Zara Houshmand using text-based Virtual Reality Modelling Language (VRML). It was in 2006 that Thiel created the Interactive 3D virtual reality installation, which is part of this exhibition. Travels of Mariko Horo is a mesmerizing blend of virtual world, historical architecture, and folklore, which invites the viewer into a surreal, underwater interpretation of Venice, where Eastern and Western iconography collide and coalesce. A fantasy virtual environment that can be explored at the viewers pleasure and peril as Mariko, seeing the exotic and mysterious Occident through her eyes and her experiences.

Thiel is not just a prolific artist – who has made significant contributions to the evolution of virtual and augmented reality art making – she is also an activist bringing the major issues of the time into stark and compelling focus.

The full large-scale projected version of Travels of Mariko Horo is being screened as part of the GLOW programme of events in the VR Library room of the Gazelli Art House on 9th April 2024.



Nonny De La Peña

Hunger in LA 2012

Nonny de la Peña has been one of the central figures in the technological development and creative use of VR/AR for almost twenty years. Prior to this, de la Peña was a journalist, writing for Newsweek and the New York Times, and a documentary filmmaker. As founder and CEO of Emblematic Group (2011), her company has created projects across a variety of genres, but her work is primarily focused on the field that she has essentially defined and named, “immersive journalism”. De la Peña was dubbed the “the godmother of VR” in 2015.

While a research fellow at USC, de la Peña began working on the first VR documentary, Hunger in LA. Based on real audio of an incident at a food bank outside a Church in Los Angeles: a diabetic man waiting in the queue collapsed when his blood sugar level dropped, and an ambulance had

to be called. De la Peña, recreated this event in VR, using animated figures to represent the participants. The piece was a powerful indictment of hunger and the health care system in the U.S.

Despite facing enormous challenges in funding and equipment, Hunger in LA premiered at the Sundance Film Festival in 2012 as part of the New Frontier program. The responses from the viewings were overwhelmingly enthusiastic for the ground-breaking work and its influence on Virtual Reality as an industry and an artform have been profound. The headset used to show the piece (which can be viewed in the Curiosity Cabinet) was built by a team at the University of Southern California which included Palmer Luckey and was the first iteration of what would become the Oculus Rift. As de la Peña herself noted, Chris Milk’s first experience with VR was of her project Hunger in LA.¹

de la Peña followed the New Frontier success with a series of documentary VR works, placing the viewer at the center of many contentious issues, such as criminal justice, abortion rights, climate change, homeless youth, and LGBTQ discrimination. Using other immersive forms, such as AR, de la Peña’s focus remains on the diversity issues she has prioritized consistently in her work and workplace.

In 2022, de la Peña received the Peabody Field Builder Award and elected to South by Southwest (SXSW) Hall of Fame.



¹Will Mason, “The ‘Godmother of VR’ Nonny de La Peña on the Future of Immersive Journalism,” January 27, 2015. <https://uploadvr.com/the-mother-of-vr-nonny-de-la-pena-on-the-future-of-immersive-journalism/>.

Spotlight on VR:

An interview with Liz Rosenthal

By Sarah Atkinson



By way of introduction to the GLOW: Spotlight on VR exhibit, and also to shine a light on the often overlooked role of the curator, I interviewed Liz Rosenthal about her career, about Virtual Reality as a storytelling form, and about the works that she has selected to feature.

Sarah: I find that the role of curator is often undervalued and unseen, but your work has been vital in the evolution of digital and immersive storytelling. There are so many individuals, projects and organisations which wouldn't have achieved the level of critical acclaim and commercial success without your involvement and expertise, you are a leader and a shaper of this domain. What is it that has driven you in your work and these roles?

Liz: That was a lovely description, thank you. I was really interested in this over 25 years ago – how digital tools were going to transform the way that artists would tell stories and create new art forms and how audiences would access them in new ways.

I came into the film business through coordinating the New British Expo at the Edinburgh Film Festival and it was really interesting coming into an industry and seeing how it functioned.

It was at the end of the 90s, filmmaking was totally inaccessible to many unless they had the resources to get into a film school or often through connections and wealth.

I ended up working with Next Wave films, a division of the Independent Film Channel in the US, financing, producing and selling films by talented emerging directors making their first and second feature films.

With prosumer video cameras, editing software and the Internet, suddenly there was a suite of accessible tools that totally changed things. We were working at the cutting edge of that, encouraging filmmakers to use these tools enabling them to learn and iterate. Suddenly the media landscape changed and this democratization of tools has fascinated me ever since. As new mediums develop, new ecosystems are necessary. It's artists who envisage and start working with them, playing with them. All kinds of new forms develop as you use them.

I was also interested in engagement and democratization and how you find audiences through communities. I've been really interested in how you create ecosystems

around new mediums and how artists and companies finance their work and sustain when there are no fixed finance and business models. With all of the programmes I've created, at Power to the Pixel, CreativeXR and at Venice Immersive, we're always looking at helping to create a whole new supportive ecosystem from ideation, producing, financing and distribution and how these new art and media forms will reach an audience.

Sarah: Thinking about Virtual Reality (VR) – which is not the most accessible of formats, what drew you to this particular medium?

Liz: You're totally right – the route to audiences is really hard. I think my fascination with the medium is about being embodied spatially in a storyworld or environment. It's the first medium where we've been able to do that, I'd previously been working in flat screen media which is obviously confined to a rectangular screen.

VR enables you to be in the scene or in a world alone or with others, enabling us to explore perception, our relationships with each other and the nature of consciousness.

With VR, you can change the nature of your body, you can exist in impossible spaces, gravity and geometry, and you can change the nature of time and space.

It's really interesting how the viewer or participant experiences a storyworld or situation. I'm very interested in projects that make you consider the real world in a different way or how you can do something impossible in a real life environment and how that experience can change your perception as opposed to just escaping and being completely dislocated from the real world. I'm especially excited about social VR and particularly VRChat where I've had profound experiences journeying through 100s of fantastical worlds. Another area where creative VR is particularly potent is in the well-being and healthcare space.

It's a medium that's evolving so rapidly. It's, only since 2014 that consumers and creators have been able to

access VR headsets. The language of storytelling is rapidly changing and it's exciting being at the beginning of something where you're seeing so many new genres, formats and possibilities. The softwares are evolving, the hardware is evolving, and artists are continually inventing incredible ways to use it.

I think hardware and software companies often believe that they're driving storytelling, but it's artists and storytellers and thinkers who are doing the driving. They are creating new genres and forms that we've never seen before in our media.

Sarah: You have curated a brilliant set of VR experiences made by a very diverse range of women makers, that span just the last three years, I imagine this is the tip of the iceberg of what's out there – what draws so many women to this particular medium?

Liz: With Power to the Pixel, I ran some of the first international project finance markets and incubators for interactive and immersive works (between 2007 to 2016). I always had more women than men participate in my incubator, market and competition programmes. I think it was because it's been really hard for women who've been excluded as directors and creators in traditional media spaces: film and television, and all kinds of traditional art forms. It was really interesting seeing the types of people and projects evolving in this undefined space.

In new mediums, because there aren't any established structures – it's very fluid. It's an area where at the beginning there are no rules, where collaboration and innovation work symbiotically. The people I work with in these spaces are truly curious, open to new concepts and to challenging how things are made and how you tell a story and who is telling it. You often find women in these spaces that aren't fully developed.

Sarah: Are there particular themes or stories that women gravitate to when developing VR works?

Liz: Considering all the different projects I've curated over the seven years of Venice Immersive, it's really interesting

[cont..]

looking at the kind of subject matters that women take on. They are often topics that feel urgent or an experience and point-of-view of the world that frequently remains unseen, a serious subject matter that artists are driven to make visible. They are often stories or experiences where it helps that the viewer is in the intimate space that VR enables, where you to fully feel and to a certain extent 'live' the experience.

I really wanted to put together an exhibition that portrays women's experience of the world. I think that's what really comes through in the vast range of important subject matters that are coming from across the world in this exhibition.

Sarah: What makes the works you've chosen for GLOW particularly remarkable?

What's amazing is the wide spectrum of experiences and stories across live action 360, animation and interactivity. All of the works have different, but amazing qualities and represent creative excellence in the medium. For instance, Singing Chen's *The Man Who Couldn't Leave* is one of the most exceptional examples of directing in 360 live action. It's so incredibly crafted and so incredibly moving. For anyone who comes from a live action film background, I think it would really blow them away to see spatial live action shots planned in this way. It's extraordinary.



Liz Rosenthal pictured with the Venice Immersive Award Winners, 2023.

When I look back at the seven previous editions of Venice Immersive, the official selection and competition of the Venice Film Festival, our top award, The Grand Jury Prize has been awarded six times to women – three of those projects are showcased in GLOW. *The Key*, *Goliath: Playing with Reality* and *The Man That Couldn't Leave* show the breadth of incredibly powerful experiences that are really important stories that women are telling in a unique way.

All of the GLOW works use the medium in the most amazing way to reconsider something, or to be in a space or a situation that you rarely have access to.

Sarah: What would you say to women and girls reading this in how you would advise them to both access more VR work and to start making VR work of their own?

It's really difficult to access VR or immersive media, even in London, which is an incredible place of innovation for art and exhibitions. For narrative VR projects that are not straight up games, or are unrelated to a well-known media brand, it is difficult to find a route to distribution. GLOW is an incredible opportunity to be able to experience these stories and it's free.

Few people own VR headsets, so viewing work in exhibitions is often the only opportunity. The Meta Quest is the most popular entry-level headset but it costs between 300–500 hundred pounds and even if you own a headset, only four out of the twelve experiences in GLOW have been published.

I would say the best way to get involved, is to join a VR community network and I'm happy to say that there are a wide range of amazing female networks and many are international. What excites me is that a lot of the knowledge sharing is across borders and people communicate fluidly through WhatsApp groups or Discord servers.

Examples of women's networks are 'Women in Immersive Tech' a European Network that welcomes everybody and the IDA network, a rapidly growing

UK grassroots network who also do in-person meet-ups. There's also the Innovate UK Immersive Tech Network which is a free membership organisation for those in UK immersive tech and content. There are numerous WhatsApp groups where the community gather around festivals or events and then the maker communities within social VR platform VRChat where people gather in VR together. You'll find people are very, generous in the XR space and like to share knowledge and run free events and workshops.

There's an amazing range of women thought leaders and mentors who are really important for those entering the space or who need advice. VR became established as the MeToo movement became widely known, so I think many women in the space have helped each other from the beginning, by setting up networks. These are essential since the tech space can often be an unwelcoming place for women.

Sarah: What would you say to the wider sector to open up these spaces and to make them more inclusive?

We're living in a threshold moment where our culture and nature is breaking down. We need to rethink how power structures operate and how our global systems have created destructive values and actions through narratives.

I believe that it's essential to have more female energy in leadership spaces. Women have a different approach to leadership and problem solving and we need to include female opinion and stories that we have not seen in our world, because our world will change through narrative. Modern history and storytelling have been almost universally patriarchal until very recently. I think it's essential to bring an equilibrium into the world and to balance that narrative with more women's perspectives.

It's through narratives that people are inspired or by experiencing a new framework or a different perspective to how our world can move forward. That's why I am driven to work in storytelling mediums.

Biography:

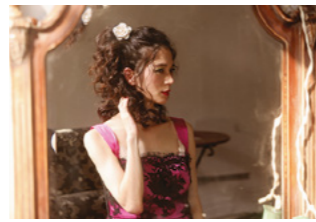
Liz Rosenthal is Curator of Venice Biennale's International Film Festival's Official Selection and Competition programme Venice Immersive. She is an Executive Producer of award-winning immersive content and helped found and lead accelerator programme, CreativeXR, managed by Arts Council England and Digital Catapult. Rosenthal is CEO & Founder of trail-blazing innovation company Power to the Pixel. She has an extensive network and knowledge of international talent, financiers and distributors across the immersive entertainment and arts space.

Spotlight on VR

Showcasing leading women virtual reality creators from across the world. Curated by Liz Rosenthal, Curator of Venice Immersive, Venice International Film Festival

The following 12 Virtual Reality experiences can be viewed in a pop-up viewing area that will be installed in this gallery space on different days throughout the GLOW exhibition period.

Comfortless



Director: Gina Kim
Production: Cyan Films
2023, Korea, US
15 minutes (part 3 of a trilogy)

In 1969, a brothel was established exclusively for the US military near the US Air Force Base in Kunsan, South Korea. About 500 residential units were built and “American Town” corporation was established with approval and support from the Korean government. The women recruited from all over the country were called “US military comfort women” by the authorities. American Town grew to be a small self-sustaining city that provided US soldiers with whatever convenience they desired: currency exchange, culinary pleasures, and sex. One thousand American soldiers visited every night. Shot on the actual site, *Comfortless* is a 360–3D cinematic immersive experience of American Town during its heyday in the 1980s.

Container



Director: Meghna Singh & Simon Wood
Production: Saltpeter Productions
2021, South Africa
16 minutes

Container makes visible the ‘invisibilised’ bodies enabling our consumer society. Confronting slavery through an ever-transforming shipping container, we witness the shards of society: the ghosts of the past and living spectres of the modern world. Our journey begins at Clifton beach, Cape Town where lie the graves of the 221 enslaved men and women who drowned in shackles when a Portuguese slave ship sank in 1794. What follows is an ever-morphing transmutation of dark societal truths within the bounds of a shipping container: a non-linear world across time and space that presents different tableaux of the enslaved silently suffering.

The Man Who Couldn't Leave



Director: Singing Chen
Production: The Walkers Films, Outland Film Production
2022, Taiwan
35 minutes

Within the walls of the former Green Island prison, political detainee A-Kuen, tells the stories of imprisonment and persecution that happened in the 1950s in Taiwan. Among fellow inmates, frozen in time, he recounts his own experiences and those of his friend, A-Ching, who never made it out. Experience the time and place, and the waiting, in hope, for a chance to keep the stories alive. *The Man Who Couldn't Leave* integrates the stories of numerous political victims of the White Terror and told through the form of an undelivered family letter. An immersive VR experience of hope, fear and camaraderie. Winner of the 2022 Grand Jury Prize, Venice Immersive, 79th Venice International Film Festival.

Goliath: Playing with Reality

Director: May Abdalla & Barry Gene Murphy
Production: Anagram, Floreal Films
2021, UK, France
25 minutes



Through mind-bending animation, *Goliath: Playing With Reality* explores the limits of reality and a true story of so-called ‘schizophrenia’ and the power of gaming communities. Echo, narrated by Tilda Swinton, guides you through the many realities of Goliath, a man who spent years isolated in psychiatric institutions but finds connection in multiplayer games. Combining heartfelt dialogue, mesmerising visuals and symbolic interactions, weave through multiple worlds to uncover Goliath’s poignant story. Winner of the 2021 Grand Jury Prize, Venice Immersive, 78th Venice International Film Festival.

(Hi)story of Painting: The Light in the Shadow

Director: Gaëlle Mourre & Quentin Darras
Production: Fat Red Bird
2022, UK
15 minutes (part 2 of a series)

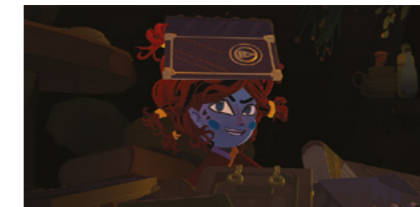


The Light in the Shadow is the second part of the *(Hi)story of a Painting* VR series, exploring the human stories behind some of the world’s greatest art and artists. This episode uncovers the story of one of today’s

most celebrated Baroque artists: Artemisia Gentileschi. We follow her extraordinary journey as she navigates a time and world where women have virtually no rights and are essentially men’s property as she becomes one of Europe’s most celebrated and in-demand painters of her time. She painted herself into posterity within her own lifetime – this story is about how she rose up against the odds and impressed the whole of Europe with her talent, and how she continues to capture our imaginations today. Winner of the Special Jury Prize for Immersive Storytelling at SXSW 2022.

Reimagined Volume 1: Nyssa

Director: Julie Cavaliere
Production: Very Cavaliere Productions
2022, USA
15 minutes



Part one of an animated VR series reimagining fairy tales by showcasing lesser-known fables, mythology and folklore in a gender-inclusive experience. Inspired by the Brothers Grimm folktale, *A Tale of the Boy Who Went Forth to Learn What Fear Was*, the story follows Nyssa, a fearless yet naive young witch who leaves her whimsical village in order to find her best friend, a toy broom named...Broom. On the way, she meets a familiar spirit, Blue and together they travel into the depths of the dark migration. Can Nyssa learn the meaning of fear and intuition in time to save her village?

4 Feet High

Director: Maria Belen Poncio, Rosario Perazolo Masjoan & Damian Turkieh
Production: Detona Cultura, Red Corner, ARTE France, Realidad 360 Argentina, Malditomaus Animation and VFX Mena Studio
2020, Argentina, France
18 minutes (Parts 1 & 2 of a 4-part series)



Juana is 17 years old and wants to experience her “first time”. And her wheelchair certainly isn’t going to stop her. She’s just started at a new high school in Argentina and is a teenager like any other, except for the fact that she observes the world from a height of 4 feet. This project depicts Juana’s journey amid her sexual awakening, her quest to find her place in society and her political activism. Inspired by the experience of co-author and co-director Rosario Perazolo Masjoan, this experience explores body diversity, consensual sexuality and the pride that comes with finding one’s place in the world.

Kindred

Director: Bambou Kenneth
Production: Electric Skies
2022, UK
9 minutes



The remarkable true story of one aspirational parent’s groundbreaking journey through the adoption process in the United Kingdom. Syd, an aspirational parent who navigates the various stages of adoption, experiences first-hand the highs and lows of a dream shared by so many. After numerous close calls and more than 150 rejections, one child comes to the fore, a gender questioning child called Ollie. Eventually, Syd and Ollie’s relationship is solidified legally by the courts and the parent-child relationship is created – in one moment they are bonded and in the process redefine the meaning of the family in the United Kingdom forever.



Rock Paper Scissors

Director: Alex Rühl
Production: CATS are not PEAS
2022, UK
7 minutes



Single mum Lina and her daughter Priya have a close and playful bond that helps them navigate life without tearing each other apart. Lina has found a fair way to settle any debate, using the game Rock Paper Scissors. But all too soon Priya learns that sometimes life isn't always like the playground. Experience life through Priya's young eyes and influence the story by playing *Rock Paper Scissors* against Mum, Lina. Looking back on Priya's earliest memories, experience the joy of winning and the frustration of losing while learning how the realities of life play a part in this heart-warming coming of age drama.

The Key

Director: Celine Tricart
Production: Lucid Dreams Productions
2019, USA
20 minutes



Meet Anna. Anna doesn't remember her past but she has vivid dreams about it. In every one of her dreams, there is a mysterious Key. Will you be able to unlock the mystery behind *The Key* without sacrificing too much? *The Key* is a magical realism experience that will take you on a journey through dreams, facing challenges and difficult decisions, leading to a shocking reveal. Winner of the 2019 Grand Jury Prize, Venice Immersive, 76th Venice International Film Festival.

We Live Here

Director: Rose Troche
Production: Afrobel, VR Playhouse
2020, USA
12 minutes



We Live Here introduces us to Rocky, a 59-year-old woman who has been living in a tent, in a park for almost three years. In this interactive VR experience you will be asked to interact with Rocky's objects and through them learn of her life, her stories. You will come to understand you are not so different than Rocky. You will understand that even you, through a series of misfortunes, could find yourself like Rocky – homeless.

The Waiting Room VR

Director: Victoria Mapplebeck
Production: East City Films
2019, UK
15 minutes



When Victoria Mapplebeck was diagnosed with breast cancer, she decided to record each step of her journey from diagnosis to recovery. Seeing her cancer cells under the microscope inspired Mapplebeck to work with 3D artists to bring to life the medical imaging she collected through her treatment – CT scans, mammograms and ultrasound. The lynchpin of this VR piece, is a 9-minute durational 360 take, a reconstruction of Victoria's last session of radiotherapy, which marked the end of nine months of treatment. *The Waiting Room* explores illness from a patient's point-of-view and reminds the audience of the person behind the diagnosis. Winner of the 2019 IDFA DocLab Award for Digital Storytelling.

Shining a Light into the Curiosity Cabinet

The Curiosity Cabinet at 171 Strand is an exhibition space dedicated to the curious, curious people and curious objects. Created by the Faculty of Arts & Humanities and King's Culture, it tells the story of some extraordinary arts and humanities research by staff and students at King's – using the physical and digital objects that have inspired or emerged from it.

Curiosity is an ever-present feature of our lives, incited and mediated by endless access to digital information. But, beyond the clickbait, curiosity has also proved itself: it has powered the research that has utterly reshaped our understanding of ourselves and of the natural world around us.

GLOW: Illuminating Innovation is the first of many Curiosity Cabinet guest residencies.

Within the cabinet is curated a series of physical and digital objects which tell the stories of the many remarkable

discoveries that have been made by women artists and experimenters during their creative process, but which have, in many cases gone unremarked.

The collection spans the 1980s to 2010s and the objects have been temporally ordered in a timeline to reveal the continued and sustained innovation.

The objects include some of the earliest experimentations with Virtual Reality (VR) including the first VR movie, the first technique for creating haptic textures, the first virtual reality camera-choreography system, and some of the first Augmented Reality (AR) eyewear.

The objects are indeed curious, in some cases unrecognisable given rapid advancements in technology, but these important touchstone contributions should not be forgotten, nor confined to the boxes stored in the garages and spare rooms from which they have been retrieved for

this exhibition, and they should take their rightful place in the history of digital innovation. Many of the physical exhibits have been kindly loaned by the artists from their own private collections with some travelling as far afield as North America.

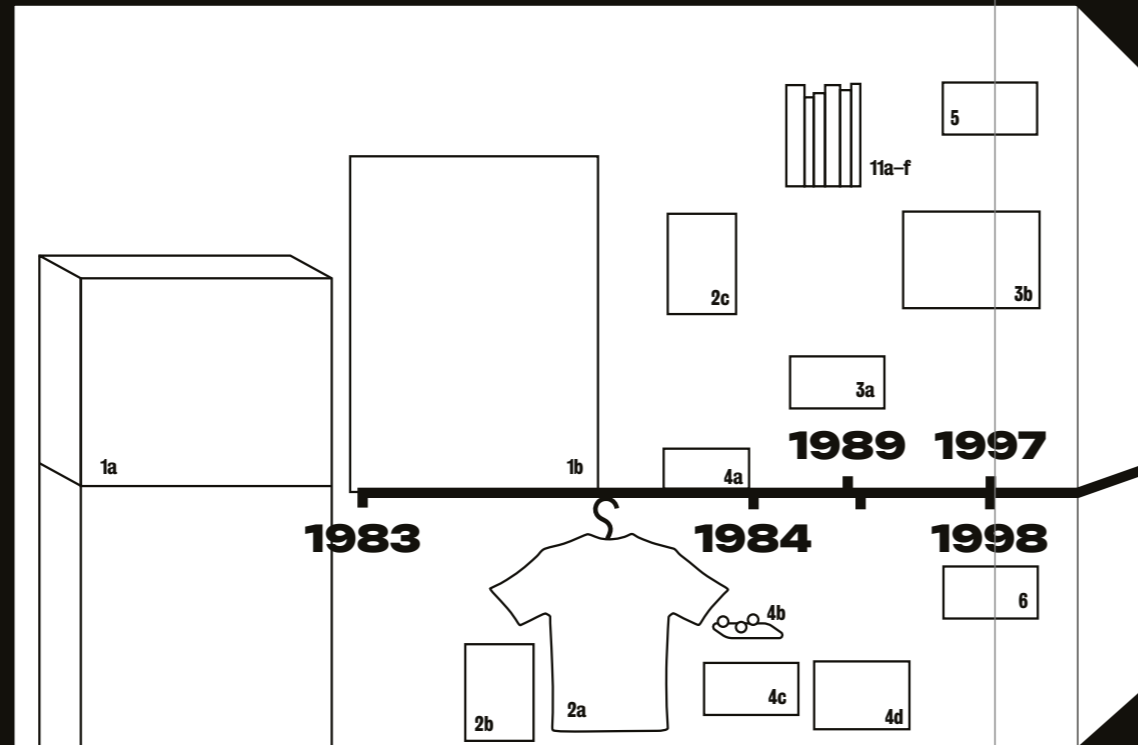
'We are delighted to welcome GLOW to the Cabinet as our inaugural residency. It provides a groundbreaking pre-history of the present and of our ever-changing digital moment.'

Professor Sacha Golob, Vice-Dean, Faculty of Arts & Humanities at King's.

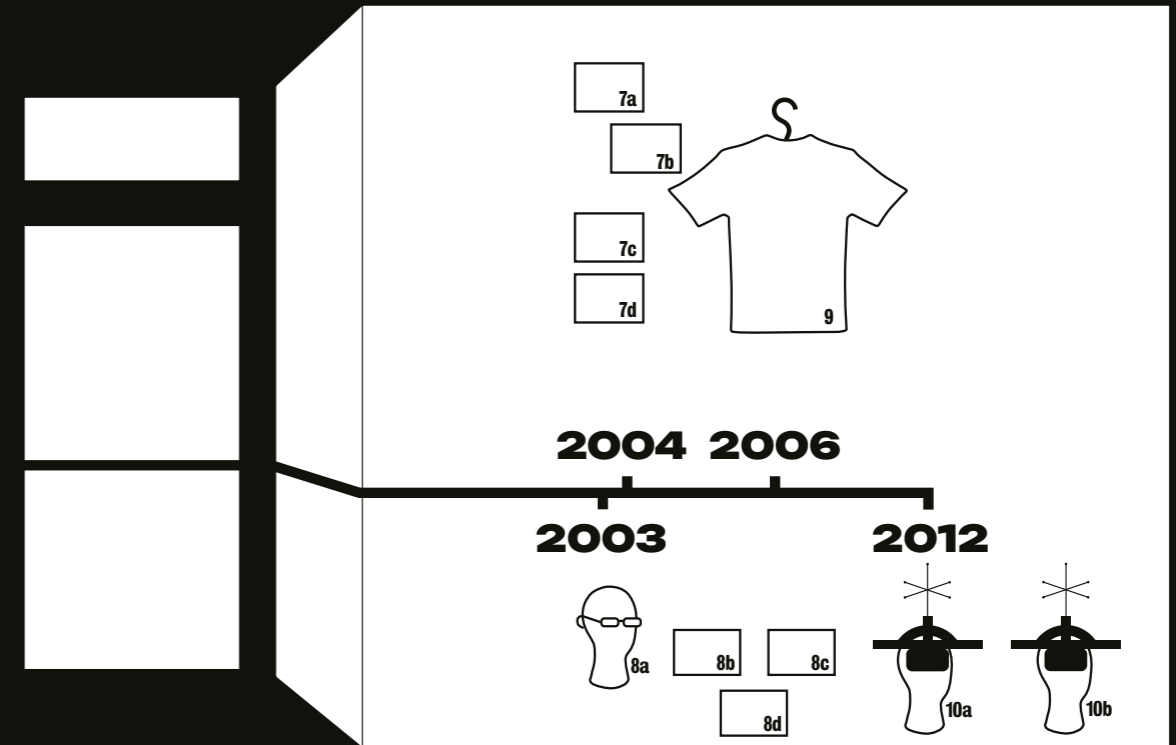


Curiosity Cabinet Guide

THE CURIOSITY CABINET



THE CURIOSITY CABINET



EXPLORE THE CABINET ONLINE

1a 1983: Townhouse Revisited (1999)
Artist: Ellen Sandor & (art)n: Fernando Orellana, Nichole Maury, Todd Margolis & Janine Fron
Description: PHSCologram Sculpture: HP/3M print, Kodalith, Plexiglas 25 x 10 x 40 inches
Credits: Thomas J. McLeish

1b 1983: Cryptobiology: Reconstructing Identity (2001)
Artist: Ellen Sandor & (art)n: Keith Miller & Fernando Orellana
Description: Virtual Photograph/PHSCologram, Kodalith, Plexiglas, 40 x 30 inches
Credits: Kathleen Helm-Bychowski, Ph.D. Assistant Professor, Department of Chemistry, DePaul University, Special thanks to Stephan Meyers

2a 1983: Connection Machine (CM-1) T-shirt
Artist: Tamiko Thiel
Description: T-shirt

2b 1983: Connection Machine (CM-1): documentation
Artist: Tamiko Thiel
Description: Photograph (1998)

2c 1983: Connection Machine (CM-2): documentation
Artist: Tamiko Thiel
Description: Photograph (2017)

3a 1989–1992: Angels
Artist: Nicole Stenger
Description: Video of immersive Virtual Reality Movie

3b 1992: Photograph of Nicole Stenger
Artist: Nicole Stenger

Description: Photograph (1992)

4a 1984–89: Force-Feedback Joystick
Artist: Margaret Minsky
Description: Main Joystick Unit

4b 1984–89: Pingpong Joystick interface
Artist: Margaret Minsky
Description: Joystick Handgrips

4c 1984–89: Video demonstration of the Force Feedback Haptic Interface
Artist: Margaret Minsky
Description: Video

4d 1984–89: Photograph of Margaret Minsky
Artist: Margaret Minsky
Description: Photograph

5 1997: Video documentation of

“Virtual Director”
Artist: Donna Cox
Description: Video

6 1998: Video documentation of “Artificial Changelings”
Artist: Toni Dove
Description: Video

7a 2003: “E” the Virtual Supermodel: E as Thierry Mugler’s Sexy Robot, Visiting Vienna, 2003, 3D model integrated into photography
Artist: Claudia Hart
Description: Photograph

7b 2003: “E” the Virtual Supermodel: E in Thierry Mugler’s Apron Dress, On the Vienna Underground, 3D model integrated into photography
Artist: Claudia Hart
Description: Photograph

7c 2003: “E” the Virtual Supermodel: E as Rei Kawakubo, Shopping in Soho, NY, 3D model integrated into photography
Artist: Claudia Hart
Description: Photograph

7d 2004: “E” the Virtual Supermodel: E in Warhol Dresses at Empire Plaza, Albany, NY, 3D model integrated into photography
Artist: Claudia Hart
Description: Photograph

8a 2003: Myophone Augmented Reality eyewear prototype
Artist: Rebecca Allen
Description: Augmented Reality eyewear

8b 2003: Photograph of Myophone Augmented Reality eyewear prototype

Artist: Rebecca Allen
Description: Photograph

8c 2003: Photograph of Myophone Augmented Reality eyewear prototype
Artist: Rebecca Allen
Description: Photograph

8d 2003: Photograph of Myophone demonstration
Artist: Rebecca Allen
Description: Photograph

9 2006: Travels of Mariko Horo wearable art
Artist: Tamiko Thiel
Description: Printed Mesh Turtleneck top

10a 2012: Prototype VR headset from Hunger in LA VR experience
Artist: Nony de la Peña

Description: VR headset

10b 2012: Prototype VR headset from Hunger in LA VR experience
Artist: Nony de la Peña
Description: VR headset

11a 1985: Books Various: A Cyborg Manifesto
Author: Donna Haraway
Description: Book

11b 1991: Books Various: Computers as Theatre
Author: Brenda Laurel
Description: Book

11c 1997: Books Various: Hamlet on the Holodeck: The Future of Narrative in Cyberspace
Author: Janet Murray
Description: Book

11d 1997: Books Various: Zeroes + Ones : Digital Women and the New Technoculture
Author: Sadie Plant
Description: Book

11e 2003: Books Various: Women, Art, and Technology
Author: Judy Malloy
Description: Book

11f 2018: Books Various: New Media Futures The Rise of Women in the Digital Arts
Author: Cox, Sandor & Fron
Description: Book

*1983 was the date that Sandor coined the term PHSCologram – although these particular examples of PHSColograms were created in 1999 and 2001.

Illuminating Artefacts

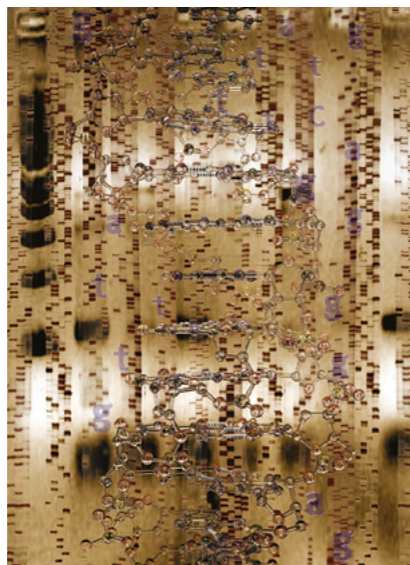
Ellen Sandor

Objects 1a – 1b

1a. Townhouse Revisited, 1999



1b. Cryptobiology: Reconstructing Identity, 2001



In the 1980s artist Ellen Sandor began creating immersive digital installations which she refers to as the daguerreotypes of virtual reality. She coined the term “PHSCologram” [scol-o-gram] to describe these computer-generated images that combined elements of photography, holography, and sculpture. These early experimentations of using virtual cameras in digital environments are the foundational basis of today’s ‘CGI’ productions. We here exhibit two later examples of these:

Created for “Townhouse,” an architectural competition sponsored by the Graham Foundation.

A series of curious artefacts and objects which tell the stories of the many remarkable contributions that have been made by women artists and experimenters during their creative process.

Townhouse Revisited (1999) addresses issues of the body, public space, and touch in the architecture of virtual reality. The work was created in response to such questions as: if hard matter and gravity offer no impediment in virtual reality, what then will meeting, working and playing in spaces look like there?

In *Cryptobiology: Reconstructing Identity* (2001), the glass DNA double helix in the foreground depicts type B DNA. This particular section was taken from the human DNA sequence coding for a protein called lysozyme. This enzyme breaks open the cell walls of some types of bacteria, and is part of our defense against infections. It was the first enzyme whose 3D structure was determined by X-ray crystallography. The sepia toned images in the background and the vertical strips staggered through the image are actual images of DNA fingerprints.

Tamiko Thiel

Objects 2a – 2c and 9

2a. Connection Machine CM-1 t-shirt, 1983

Tamiko Thiel initially created the visual design of one of the world’s first artificial intelligence super computers¹ as the research group’s official t-shirt in 1983.

2b. Connection Machine CM-1 t-shirt, 1998

Tamiko Thiel pictured in front of an Apple Computer “Think Different” promotional poster featuring Richard Feynman (Nobel physicist, noted for his major contributions to quantum computing and nanotechnology) wearing the CM-1 t-shirt.



Photo: Lew Tucker

2c. Connection Machine CM-2, 2016

Tamiko Thiel with the Connection Machine CM-2, at the opening of the exhibit “Thinking Machines” at MoMA NY, 2017. Photo Tamiko Thiel.



Thiel was part of the group responsible designing the physical and visual form of the Connection Machine at Thinking Machines Corporation (1983–1985). The Connection Machine “massively parallel supercomputer” project was led by Danny Hillis, a PhD student in the MIT Artificial Intelligence Lab under Marvin Minsky (known as one of the grandfathers of Artificial Intelligence). The conceptual design of the supercomputer’s form drew on Nobel Physicist Richard Feynman’s design for the internal routing network in the form of a 12–dimensional hypercube, as best exemplified by the logo that Thiel designed.

In an interview, Thiel revealed the significant impact that the design later had:

“Joanna [Hoffman] told me a few years after I had left Thinking Machines that when the connection machine came out, she was working directly with Steve Jobs at NeXT and he saw a photo of the machine and said “bring me that designer. I want them to design my next cube,” and Joanna said, “I’m sorry Tamiko went to Europe to become an arts student and she has no email and I have no idea where she is.” All of which was true. But now, at least 30 years later, it was confirmed that the machine *had* influenced Steve Jobs sense of design.”²

Thiel has been at the forefront of virtual world creation over the past three decades, going onto create and exhibit multiple Virtual Reality works and Augmented Reality installations.

9. Travels of Mariko Horo wearable art, printed Mesh Turtleneck top, 2023

For the first time ever, The Travels of Mariko Horo, the Interactive 3D virtual reality installation is being sold as wearable art in collaboration with Bobblehaus:



Photo: Vanessa Le

Nicole Stenger

Objects 3a – 3b

3a. Angels, (“Les Recontres Angeliques”), 1989–1992.

Video documentation of Angels, the first immersive ‘Virtual Reality movie,’ a real-time interactive experience. Music composed by Diane Thome.

3b. Photograph of Nicole Stenger

Nicole Stenger wearing the Dataglove and high-resolution VR goggles that were used to make and access the original version of Angels. These were two of the VR technologies developed by Jaron Lanier who originally coined the term ‘Virtual Reality’ in 1987.



Nicole Stenger with VR equipment by VPL California, 1992

A French-born American artist working in virtual reality and Internet movies, Stenger created Angels, the first VR movie whilst as a Research Fellow at MIT. One of the first artists to explore the artistic virtual reality medium, her works have been featured in the SIGGRAPH Art Show, the FILE Festival, the JavaMuseum, the Cartier Art Foundation and are part of the Archive of Digital Art (ADA). In 2013, she was included in the “Contemporary women artists on the web” collection of the National Museum of Women in the Arts, in Washington, D.C.

Margaret Minsky

Objects 4a – 4d

4a. Force-Feedback Joystick, 1984–89

An integrated assembly of motors, metal linkages, and electronic connectors built into wooden/metal box.



4b. Pingpong Joystick interface, 1984–89

4c. Video demonstration of the Force Feedback Haptic Interface, 1984–89

4d. Photograph of Margaret Minsky, 1984–89

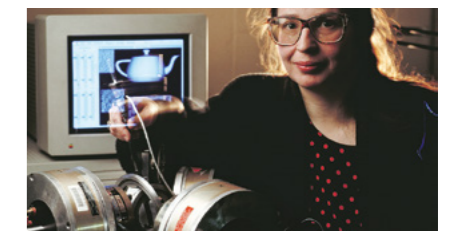


Photo: Peter Menzel

People can recognise, by touch, 99% of common objects within 1 to 2 seconds. (Susan J. Lederman & Roberta Klatzky, 1988)

Margaret Minsky’s research into haptic technologies – computational interfaces that enable you to touch and feel simulated objects – provided the early foundations for tactile feedback in virtual environments which are today used in computer gaming and sensory immersive experiences.

This collection of objects documents the development of the first technique for creating haptic textures, a Lateral-Force Algorithm, which Minsky undertook as part of her doctoral research at the MIT Media Lab.

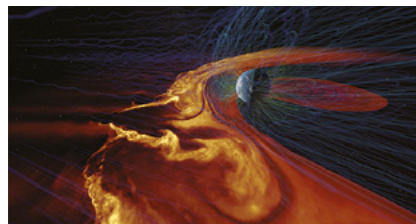
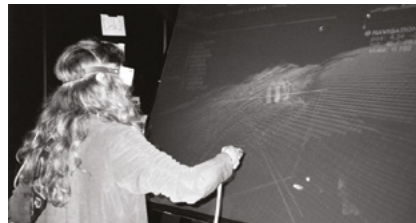
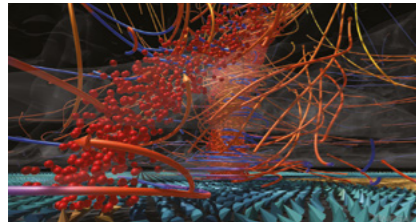
These are the original force-feedback joystick and pingpong joystick interfaces that she created as part of her research. The joystick simulates the physical building blocks of matter: spring, damper and mass which can be felt by gripping the joystick handle.

Donna Cox

Object 5

5. Video documentation of "Virtual Director," 1997

(with Robert Patterson and Marcus Thiebaux)



Donna J. Cox and Robert Patterson standing in the CAVE stereoscopic virtual environment at the NCSA, University of Illinois, using Virtual Director software to choreograph 3D stereo computer graphic camera for visualizing colliding galaxies for IMAX movie Cosmic Voyage (Photo circa 1994).

"Study of an F3 Tornado: Tornado Chase View" (2004) by Donna J. Cox, Director AVL, Robert Patterson, Stuart Levy, Alex Betts, Matt Hall, AVL, NCSA, UIUC, using scientific data by Bob Wilhelmson, et al, NCSA and Lou Wicker, National Severe Storms Lab, NOAA. A version developed for "Hunt for Supertwister" television (2004) and shown in "SIGGRAPH" (2005) international exhibition. The digital thunderstorm simulates the actual physical eruption and growth of the deadly tornado that ripped through midwestern United States.

Donna J. Cox using Virtual Director software to navigate a virtual camera path of the thunderstorm within the Immersadesk™ stereoscopic display (Photo circa 1994).

"Solar Plasma Interacting with Earth's Magnetic Shield" (2015) by Donna J. Cox, Director AVL, Robert Patterson, Stuart Levy, AJ Christensen, Kalina Borkiewicz, Jeff Carpenter, AVL, NCSA, using scientific data by Homa Karimabadi, University of California, San Diego, et al. Flat screen animation frame from "Solar Superstorms" international full-dome theater exhibition. The artistic visualization of a scientific numerical model reveals a turbulence generated by a solar wind interacting with Earth's magnetic field during a powerful solar storm.

The first Virtual Reality camera-choreography system, Virtual Director is referenced by many other patents including from Google, Pixar, IBM, Sony and Autodesk and is the earliest realisation of today's much-hyped 'Virtual Production' systems. Virtual Director not only enabled the creation of visualizations; it also provided remote virtual collaboration connecting different people in remote locations.

It operated in the CAVE virtual environment, a room-size, rear-screen projection system that enables the images to be seen in 3-D stereo, in real-time. "We have used Virtual Director to interactively work with scientists in remote locations and to meet in cyberspace in order to create the visualizations. When we meet in cyberspace, we have our independent points of view, and can navigate independently. However, we share the same environment and see one another as avatars. We share camera paths and see each other's camera viewpoint on suspended virtual televisions." Donna Cox

Professor Donna Cox is a revered film industry expert who has worked on numerous cinematic projects, including IMAX's "Cosmic Voyage," "A Beautiful Planet," and "Hubble 3D."

Toni Dove

Object 6

6. Video documentation of Artificial Changelings, 1998, Toni Dove



Artificial Changelings was an interactive laser disk and sound installation that used motion sensing to track the location and movements of a viewer standing in front of a dimensional rear projection screen. This was a very early iteration of video motion sensing that is now very a familiar technology in contemporary computer game systems.

Each 30-minute show of *Artificial Changelings* had certain similarities, but many differences dependent on the viewer's navigation through the three 'zones' of the story (accessed by stepping on the floorpads) and through their physical motion which affected the character's behavior, the viewpoint of each scene and the century of the story.

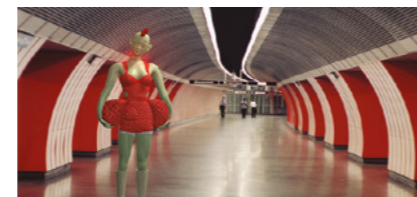
Dove has been producing unique and highly imaginative embodied hybrids of film, installation, and performance since the early 1990s. In her works, performers and participants interact with an unfolding narrative, using interface and interactive technologies.

Dove's installations feature female characters from different eras who are subjected to the economic and technological determinants of their time. Dove had previously co-created *Archaeology of a Mother Tongue* (1993) – a "virtual reality murder mystery" – with Michael McKenzie, which is now recognised as one of the first examples of narrative-led Virtual Reality.

Claudia Hart

Objects 7a – 7d

7a – 7d. "E" the Virtual Supermodel, 2003–2004 Claudia Hart



These 4 photographs of "e" which integrate 3D elements are from a larger series depicting the first virtual supermodel (a claim much made later by others). "e" represents the condition of the contemporary woman in today's postindustrial, technological society. "e" is a metaphor of woman as the ultimate consumer product in a dystopic future world in which the artificial has uneasily crossed the boundary of the real.

Claudia Hart has always been at the forefront of experimentation with virtual imaging, using 3D animation to make media installations and projections, then later as they were invented, other forms of VR and AR. Hart's work is about issues of the body, perception, nature collapsing into technology and then back again. Everything is fluid in it including gender.

Rebecca Allen

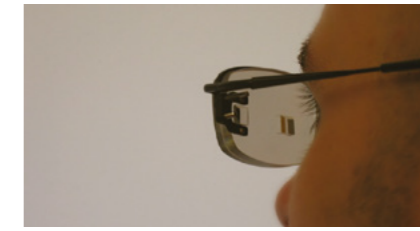
Objects 8a – 8e

8a. Myophone Augmented Reality eyewear, 2003, Rebecca Allen Courtesy of Mark Spitzer, MicoOptical.

8b. Photograph of Myophone Augmented Reality eyewear prototype, 2003, Rebecca Allen



8c. Photograph of Myophone Augmented Reality eyewear prototype, 2003, Rebecca Allen



Allen created *MyoPhone* in 2003 whilst at Media Lab Europe. MyoPhone is an 'intimate interface,' in which the user wears a pair of eyeglasses with a display embedded in the eyeglass lens and a LED in each corner of the frame. A wireless electromyographic EMG sensor on a bicep serves as the interface. When the computer detects an incoming call from the user's mobile phone it illuminates an LED in the user's peripheral vision. If the user would like more information about the caller, the bicep is subtly contracted, which brings the caller id information into the main field of vision (through the eyeglass display). The user may dismiss the call with another muscle contraction and additionally send an SMS message to the caller. This work intentionally utilizes muscles to engage the body directly as an interface.

8d. Photograph of MyoPhone demonstration, 2003, Rebecca Allen



Pictured in the photograph are Larry Page and Sergey Brin (founders of Google) with Brin wearing the eyeglass display during Allen's demonstration in 2003. It was this demonstration that sparked their interest in thinking about eyeglass displays which later led to the invention of 'Google Glass.'

Reference: Costanza, Enrico, Samuel A. Inverso, and Rebecca Allen. "Toward subtle intimate interfaces for mobile devices using an EMG controller." In Proceedings of the SIGCHI conference on Human factors in computing systems, pp. 481–489. 2005.

Nonna de la Peña

Objects 10a – 10b

10a–10b. Prototype VR headset from Hunger in LA VR experience, 2012, Nonny de la Peña.



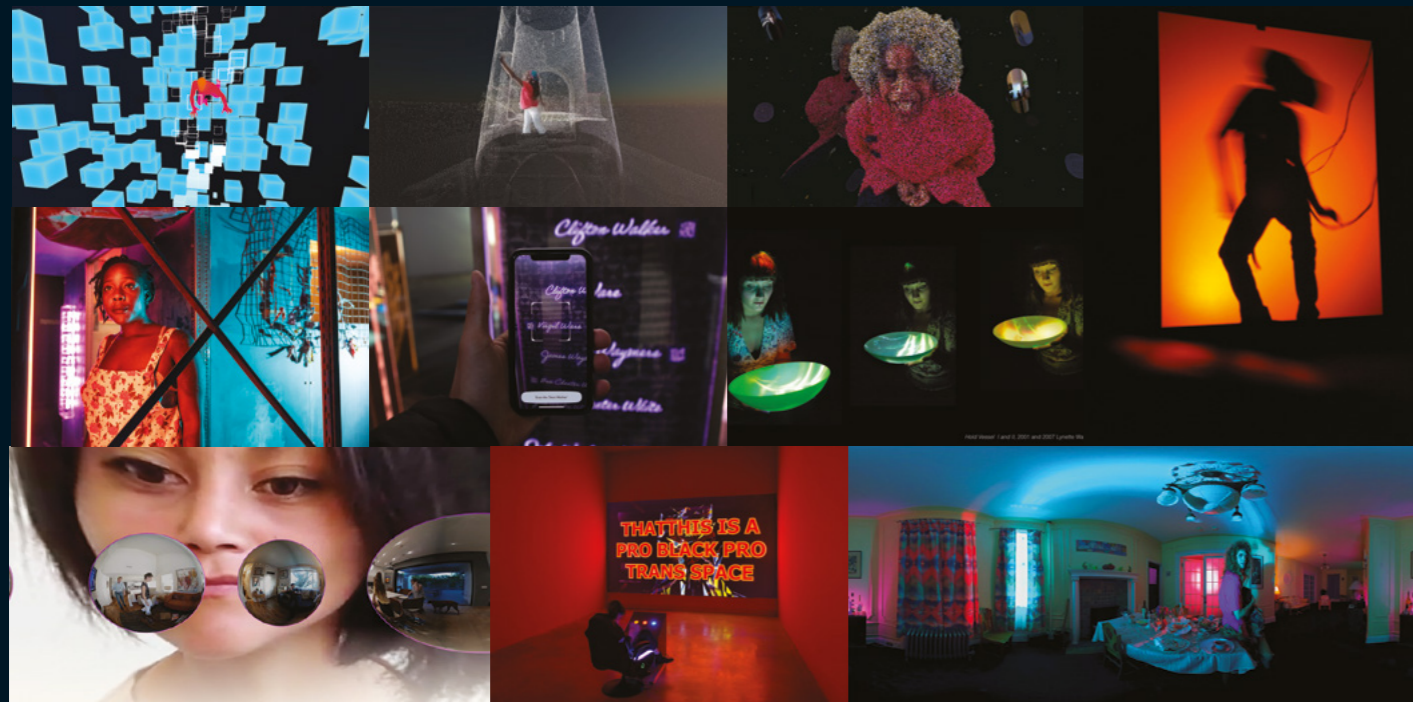
These were used to show this piece when it premiered at Sundance Film Festival in 2012 and enabled "walk-around VR" for the first time. It was also around this time that de la Peña coined the term and inaugurated the medium of "immersive journalism." Using a mobile phone in a headset enabled the viewer to move around more freely and to be more responsive to the piece and the characters who they were engaging with. The headset, which showed the 12-minute piece, was built by a team at University of Southern California including Mark Bolas, Palmer Luckey, Thai Phan, and Evan Suma. Luckey went on to sell his headset company Oculus Rift to Meta (Facebook.)

¹Tamiko Thiel, "The Design of the Connection Machine," *Design Issues* 10, no. 1 (1994): 5–18.

²Interviewed by Atkinson for *Mixed Realities*, March 15 2022.

Mixed Realities: Gender and Emergent Media

By Sarah Atkinson & Vicki Callahan
To be published by Wayne State
University Press, Spring 2025.



Goliath, 2021, Anagram | *Suga*, 2021, Valencia James | *When Words Fail*, 2020, Stephanie Dinkins | *Ephémère*, 1998, Char Davies | *A Face to Open Doors*, 2020, Anagram | *Un(re)solved*, 2021, Tamara Shogaolu | *Hold Vessel I and II*, 2001 and 2007, Lynette Wallworth | *Lauren*, 2017, Lauren Lee McCarthy | *Black Trans Archive*, 2020, Danielle Braithwaite-Shirley | *Through You*, 2007, Lily Baldwin

Mixed Realities examines the experiences of women, gender non-binary, and genderqueer individuals in the realm of creative production with emerging digital technologies. Focused on the lived experiences of those shaping and leading in artistic and industrial domains during a technological transition, the book uncovers the commonalities among its 140 research participants.

Across diverse global geographical locations, the shared insights of these participants reveal striking similarities, highlighting the universal

challenges faced. Exploring transmedia, multiplatform, Virtual Reality (VR), Augmented Reality (AR), and immersive technologies, the book exposes how these mixed spaces inherit the systemic exclusion and funding disparities of the traditional media industries.

Despite systemic challenges, the research uncovers a significant surge in gender-diverse participation and innovation during the nascent phases of these technologies. Participants played pivotal roles in shaping and evolving fields, establishing new art forms and

creative practices. Unfortunately, the commercialization of technologies often led to the oversight and neglect of these essential contributions.

Viewed as just a starting point, the book urges further exploration of these stories to identify additional contributions and innovations. Emphasizing the necessity of diversifying voices, stories, models, and futures, the research underscores the importance of recognizing and valuing a broad spectrum of perspectives, particularly as society advances into the era of AI.

Acknowledgements

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