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Reframing Innovation: Art, the Maker Movement and Critique

VICTORIA BRADBURY

Assistant Professor of New Media, University of North Carolina Asheville

SUZY O'HARA

Research Associate, University of Sunderland

ABSTRACT

This paper outlines five presentations delivered by invited panelists during *Reframing Innovation: Art, the Maker Movement and Critique*, our New Media Caucus affiliated panel at the CAA Conference, February 2019, New York City. The panel developed from our co-edited volume, *Art Hack Practice* (forthcoming, Routledge) which investigates global art hacking practices employed by individuals and groups who are working within, around or against the phenomenon known as 'maker culture' as artists, designers, curators and historians.

Each presentation offers a distinct account of contemporary art practices that reveal the many manifestations, characteristics and dialogs around current art hacking practices. By publishing these talks here, we aim to provide readers with new insights into projects that challenge perceived distinctions between sites of artistic and economic production by brokering new, direct ways of working between them, thereby challenging traditional understandings of the role and place of the art in society.

INTRODUCTION

DIY culture has garnered significant attention and resource in recent years, catapulting 'hacking' and 'making' and the spaces in which they occur into a front-and-center position (rather than a peripheral one, which is more familiar to the arts). The practitioners showcased in this panel and paper demonstrate some of the synergies and dissonances at play for artists working within this space between art, making and innovation.

Artists, particularly new media artists, have been working within alternative spaces of production for quite a long time, accessing strategies that have a long breadth and depth of history. Beryl Graham and Sarah Cook in *Rethinking Curating: Art after New Media*¹ write about modes in which new media breeds collaboration and working in alternative contexts in ways that are

different from contemporary art. Straddling art and technology requires artists and curators to link multiple points of contact, often working within collectives or groups to achieve technologically complex projects. An experienced curator can serve as a broker² between parties, including organizations, labs, artists, galleries, festivals and other alternative contexts, to facilitate a complex navigation of projects with various players and mediate differing intents, expectations and working practices.

New media artists use spaces in ways that are different from commercial entities and have developed projects, prototypes and artworks that have established a more open and inclusive offer within making spaces. While there are synergies of necessary resources, artistic and commercial players have different goals and values. Our panelists refocus attention from maker spaces and labs as sites for commercial ventures and startups to their use by artists and curators to create and disseminate projects that are shaping future practice.

Suzy O'Hara's research and curatorial practice is informed by innovation-based strategies (e.g. hackathons, design thinking, interdisciplinary, cross-sector collaborations) and collaborative and co-creation production contexts operating at the intersection of creative arts, research, innovation and society. As Research Fellow for Faculty of Arts and Creative Industries, she has recently instigated Co/Lab Sunderland³ (December 2018). Co/Lab is an interdisciplinary, cross faculty commissioning programme that aims to provide a mechanism that will foster new opportunities for academic staff to; critically engage with cross disciplinary perspectives, explore their creative processes, take risks, innovate new ways of working together and challenge the ways in which their field is understood and experienced through arts and creative practice.

In her role as Innovation Development Specialist (University of Sunderland) for Creative Fuse North East⁴, she explored the ways in which ideas, models and approaches from creative practice can: stimulate innovation across different sectors and industries; enrich the quality of life of communities, building a sense of place, identity and wellbeing and supporting social cohesion; develop sector-wide fluency and confidence within and across the arts when conducting creative Research and Development (R&D) and generate art within industries and contexts other than its own. She particularly focused upon the hackathon format as a way to access university resource and expertise and apply it to the development of a large-scale public art commission, entitled Wonderlooper⁵. The Thwackathon Day 1 & Day 2 were two art hack innovation days, developed to inform the R&D process for Wonderlooper - the winning concept proposed by artist Di Mainstone to celebrate the opening of the New Wear Crossing road and pedestrian suspension bridge in Sunderland. Engineers, designers, musicians, programmers and artists came together to invent and make a series of prototypes, mechanical and digital devices that could bow, twang and pluck the bridge and inform the final commission.

Victoria Bradbury is an artist working with interactive installation, physical computing and Virtual Reality. At the heart of her practice is a hands-on, experimental process that regards both analog and digital with equal weight and balance⁶. Two of her recent projects were shown in the introduction to the panel, *Reprocessed Garden*⁷, a stitched ecosystem mediated by architecture, sensors and custom software and *Blue Boar VR*, which raises questions about truth and justice by inserting viewers directly into the story of her ancestor who was convicted in the Salem Witch trials, having been accused by her neighbors of manifesting as a blue boar. She began thinking about the research that would become *Art Hack Practice* when she was living and working in Shanghai China in 2012 and working in Xinchejian Hacker Space⁸ as a temporary studio. Here

she met Silvia Lindtner⁹, who researches DIY maker culture around the world, and heard Chris Anderson speak in Beijing about *Makers: The New Industrial Revolution*¹⁰. She wanted to find a way to carve out a place in the escalating conversation around ‘making’ and ‘hacking’ that would amplify the artistic practices that were already prevalent in this space. She later learned about Garnet Hertz’s work with his zine series, *Critical Making*¹¹, which serves as, “appeal to the electronic DIY maker movement to be critically engaged with culture, history and society”¹².

For the past two years, Suzy and Victoria have been engaged in a process where they have been looking for people around the world who work in a space between ‘maker’ practice, innovation, art, art history and curating as they develop *Art Hack Practice*. This *Reframing Innovation* panel provided a significant opportunity to convene some of the international voices they have been engaging with remotely during this time, at a live event. It also provided an opportunity to connect with significant voices actively operating within this field, outside of the context of the book.

PRESENTATION SUMMARIES

The five invited panelists were Olga Mink, Ayodamola Okunseinde, Irini Papadimitriou, Morehshin Allahyari and Dr. Ellen Pearlman. Following are short biographies of each of the presenters and summaries of their talks paraphrased by this essay’s authors from audio recordings of the presentations.



Figure 1. Brainwave Wedding. Image by Lancel/Maat & Baltan Laboratories, 2017.

Olga Mink

Olga Mink is from Eindhoven, Netherlands, where she is Director of Baltan Laboratories¹³, which initiates innovative research and development at the intersection of disciplines. Baltan uses a model called open innovation, which Mink defined as a methodology of developing knowledge and ideas together with artists, designers, people from industry and researchers, a model that Baltan adopted from technology research centers. Baltan develops a topic and then facilitates or creates meeting points, matching people from the sciences with industry, cross-fertilizing ideas and developing new projects together. Baltan focuses not so much on the end result, but on the ‘multi-stage processes’¹⁴ that artworks go through as they are created, particularly when they are interdisciplinary in nature. They strategically develop transdisciplinary partnerships and collaborations between people coming from different backgrounds.

Baltan also uses a method called social innovation, which created more open-ended processes that embrace experimentation by presenting teams with “wicked challenges”¹⁵. Baltan worked with an international NGO and artists from South America, Asia, and Africa to collaborate on specific teams and develop ideas that connect these artists to the local community in Eindhoven. The community included designers, artists, organizations and companies. Teams would develop ideas and see how the various collaborators could cross-fertilize their knowledge. Those from Eindhoven could learn from the international artists and the international artists could take methods back from The Netherlands to their home countries.

One key project that Mink showed is called E.E.G. kiss¹⁶, a research project by an artist couple, Lancel/Maat, in which E.E.G. data gathered as a couple kisses can be turned into a design for a digitally fabricated wedding ring that seals the moment of affection shown at their wedding ceremony in a wearable artefact. They are developing this project toward a version that could be an actual wedding service.



Figure 2. Unbroken Meaning. Ayodamola Okunseinde. © Ayodamola Okunseinde, 2018.

Ayodamola Okunseinde

Ayodamola Okunseinde is an artist and interactive designer who has exhibited and presented at the 11th Shanghai Biennale, Tribeca Storyscapes, EYEO Festival, Brooklyn Museum, M.I.T. Beyond the Cradle and Afrotectopia amongst others. Ayo currently teaches at Parsons School of Design¹⁷.

Ayo began his presentation by framing his work under the term ‘Reclamation’, rather than ‘Afrofuturism’, under which it has been previously categorized¹⁸. He works under the umbrella of design and considers ways to design speculative futures and “[moving] those futures into spaces that are preferred as opposed to spaces that are probable. With [his] work, [he] think[s] about jumping into the future or jumping into the past, finding problems, solving those problems, and then bringing those answers to the present as a way of critiquing the present.”¹⁹

Ayo showed his artistic projects, those produced through his commercial fabrication company, Universal Solvent Studios²⁰ as well examples of his teaching. It was notable that he discussed these various arms of his practices seamlessly and described how they support and inform one another. As a professor, he has noticed in his students a concerning “trend towards less criticality”²¹. He aims to create work (and also encourages his students to do so) that uses technology while being critical of how it is being implemented commercially and by governments. Examples he gave include Facebook’s implementation of VR disaster tourism and crime profiling by creating a face-image with DNA (“totally bunk”²² but still being used, Ayo stated).

Ayo began by presenting his project *The Rift*²³, which was a suit that he wore around New York City that gave him oxygen and water and cooled him down, allowing “people to see a future representation of Africa and change their perceptions of Africa”²⁴. He discussed the Iyapo Repository²⁵ project, in collaboration with Salome Asega, in which they ask people of the African diaspora, in workshop contexts, to create and design objects of the future. They prototype, exhibit and archive some of the objects designed by participants. This allows them to engage deeply with communities, particularly young people of color, who can use the act of designing objects to envision the future. He emphasized that with participatory projects, one has to be careful what questions they are asking of people. For example, in another project in which he and a collaborator asked people about their fears -- these became very tangible and people truly shared their feelings. The artists quickly realized that they had to be very careful with how they would use this information.

Ayo emphasized iteration and prototyping as ingrained in his practice. At the same time, however, as we address “wicked problems”²⁶ (including pollution, overpopulation, racism, and climate change), “We have to consider accountability, diversity, and authenticity”²⁷. When teaching about machine learning, we *must* teach at the same time about accountability and diversity. “we have to ask our students to be authentic, ask them to look inside, to actually find something that resonates, that they can build on”²⁸.

Ayo concluded by discussing ways in which his triad of practices: art-making, teaching and commercial work - can integrate and engender “ideas of responsibility, diversity, and authenticity”²⁹ as part and parcel to their development.

Irini Papadimitriou

Irini Papadimitriou, who joined the panel via pre-recorded video, is a curator, producer and cultural manager. In October 2018, Irini took up a new position as Creative Director at FutureEverything³⁰, an art organization based in Manchester, UK. Before that, she worked as the Digital Programmes Manager at the Victoria and Albert (V&A) Museum³¹ in London for ten years, where she initiated and was responsible for Digital Design Weekend³² and Digital Futures³³, among other projects. The case studies described in her talk relate to her time at the V&A.

Irini discussed her approach to curating a range of formats she explored during her time at the V&A that were designed to investigate ways to hack a traditional (National) museum and create a space that supports conversations about digital culture, technology, and society. She described *Digital Design Weekend*, an annual, two-day event that brought together artists, technologists, scientists, developers, industry professionals and the general public over a weekend in the museum. The programme delivered a range of installations, workshops, talks and labs, designed to encourage people to spend time together and discuss ideas, explore and ask critical questions, share skills and processes emerging at intersections of art, design, technology and science. The project created a space for people to collaborate, but also to engage everyone critically with contemporary issues and with technology.

Irini then shared a quote from Kate Davies and Liam Young’s *Tales from the Dark Side of the City*³⁴:

“your smart-phone runs on the tears and breast milk of a volcano. This landscape is connected to everywhere on the planet via the phones in our pockets; linked to each of us by invisible threads of commerce, science, politics and power.”

The quote relates to a legend about a time when volcanoes were alive and roaming the plains freely. When the only female volcano (who was called Tunupa) gave birth to a baby, the male volcanoes were stricken by jealousy and they stole the baby and hid it away. The gods punished the volcanoes by pinning them down to Earth. Tunupa, who was grieving for the child she no longer had, started weeping deeply. Her tears and breast milk combined to create a giant salt-lake, the Salar De Uyuni, as it used to be called. This lake holds the world’s largest supply of lithium and minerals and highlights the invisibility that shrouds the production and impact of the objects and technologies that we use every day.

Irini used this quote as a bridge to explain that the purpose of the Digital Design Weekend program was to help identify those questions we need to ask about the impact of technology and technological worlds but also to understand our complex relationships with technology. While Irini’s approach had similarities to hacking, her aim was more than just to make and tinker. Rather, she took an anthropological approach to understand how technological systems shape our society and lives while asking questions such as: what is digital? What do we mean by it and

where does it exist in our world and how does it exist in our lives right now? How might it exist in our lives in the future and how can we shape collective visions about the future rather than adopting visions that are shaped by corporations or whoever designs them for us?

The discussion turned to an off-site project, entitled Digital Futures UKMX, which brought her programme outside the white cube and the walls of museum. Her team worked with the British Council and connected citizens in Mexico City with communities in Dundee, Scotland. These are two very different cities, however, their citizens had many similar questions and were talking about similar experiences, such as; living in big or developing cities or talking about issues of transport, food or future food, agriculture, pollution and waste. The team connected again, over a long weekend and invited people to take part in a hackathon and to engage in a series of walking tours around their cities. The aim was to try and encourage participants to talk to each other about how these issues impact their everyday life but also to create together and try to respond to some of these challenges collaboratively.

Art and science networking research project *Bodies of Planned Obsolescence*³⁵ was another off-site project that focused upon developing strategies to engage with political, sociological, and ecological issues around electronic waste and obsolescence in countries that export and import used technology. The project involved people from different countries, including Nigeria, China, and the UK and backgrounds, such as science, environmental studies, art, as well as design and performance. It investigated the process of electronic waste dismantling and recycling to foster a deeper understanding of the journeys of electronic waste.

Irini highlighted that in our hyperconnected world, we're constantly exposed to technology. On the one hand, these tools can give us a voice or allow us to explore new modes or inspire ideas, build knowledge, take action, or influence change. On the other hand, technological developments at unprecedented speed have also opened up ways to progress advancements in health, design and engineering. However, although technology seems separable from everyday life, for most of us this relationship with digital is a superficial and consumerist one. We don't understand the complexity of technology or what lies beneath everyday devices. From how and where they were made, to social implications, ethical issues, surveillance, government control, obsolescence, and environmental issues, as well as use of conflict minerals, working conditions, and other issues. Irini says that now is a critical time to reflect upon these roles of the digital and take a critical stance about the complex issues involved.

A map that Kate Crawford and Vladan Joler put together, called the Anatomy of an AI System³⁶, exposes these hidden and invisible journeys but also the layers beneath everyday technologies, which was, in this case, Alexa. This map shows the birth, life, and death of the AI system Alexa, which is a disembodied part of a bigger entity. Alexia is not just a single object, but is connected with other things. Crawford and Joler's map helps us understand the hidden layers that are behind our technologies; exploitation of human resources but also natural resources, human labour, mining and disposition of materials.

Irini finished by giving a brief introduction to her new position at FutureEverything, which is not a venue nor an art museum. They are an art organization that is trying to bring similar conversations into the public realm. She concluded by presenting their most recent commission, *Everything, Everytime* by Naho Matsuda³⁷. The work is a large public art installation of data

poetry, a poetic narrative created from static and real-time data about our interactions with the urban environment to tell stories about people and places in a city. The work was to be presented at South by South West (SXSW) this year. She sees the piece as a way to enable these conversations to happen about data: where it comes from, who controls it, what happens to it, and is it everybody's data or does it exclude people? This is central to the notion of hacking the museum and the need to take these conversations into different contexts, making sure as many people as possible are involved.

Morehshin Allahyari

Morehshin Allahyari is an artist, activist, educator and curator. She has been part of numerous exhibitions, festivals and workshops around the world including at the Pompidou Center, Tate Modern, Transmediale, Eyebeam, Queens Museum and many others. She was recently awarded two major commissions by Rhizome as well as the Whitney Museum of Art, Liverpool Biennale and FACT³⁸.

Morehshin discussed her bodies of work that investigate digital fabrication from a critical and artistic perspective. Her inquiry into digital fabrication began as she noticed how the medium and materials were being used uncritically in maker spaces – there was a lot of plastic waste being created without much thought going into what was being made and why (particularly oil-based plastics and resins used in 3D printing). Morehshin highlighted in her presentation that the digital fabrication project that was getting the most attention around 2013 was Cody Wilson's 3D printed gun. Around the same time, she began to consider how 3D printing could be used in a way that was “provocative” but did not “promote radicality”³⁹.

Morehshin and Daniel Rourke began work on *The 3D Additivist Manifesto*, out of their theory of Additivism (the word is a combination of attitude and activism). The Manifesto would become a huge document that coalesces artistic or activist digital fabrication projects that use ‘maker’ materials in compelling ways. The manifesto itself presents ways in which 3D printing can be applied critically - questioning what it does as a medium and how it embodies the use of plastics (thus oil) in its structure. They held an open call for the 3D Additivist Manifesto publication and selected projects to include. Morehshin and Daniel wanted to “reshape and rethink a lot of things that were happening in maker spaces that [they] thought needed a bit of push and questioning...”⁴⁰

From 2015-17, Morehshin worked on *Material Speculation: ISIS*. She mentioned that there was a great deal of concern when the videos of ISIS destroying ancient artefacts⁴¹ in the Middle East were circulated on social media. This kind of destruction of cultural artefacts had never before been released to world on video in this way. Morehshin said that “the very method of sharing that destruction was very new”⁴². She spent 6-7 months just gathering information and research to develop *Material Speculation: ISIS*, including directly contacting researchers and scholars who specialized on the artefacts that had been destroyed. [She spoke of how](#) difficult it was to obtain information on the artefacts and there were several reasons for this, including Iraq having been at war for 30 years and the artefacts not having been well-documented because of the museums that housed them being under-funded. Because of this and the lack of images of the subjects, after research, Morehshin's next step was to create 3D-printable models of the artefacts. She worked with students and staff at Autodesk, during her Pier 9 Autodesk residency, to 3D model the artefacts “as accurately as possible”⁴³. Finally, she embedded flash cards with the STL and OBJ

files on them, into the sculptures. She was thinking of the sculptures “as time capsules and how can we keep this information, this knowledge, this destroyed memory, as support for future civilizations.”⁴⁴ She is particularly considerate about how to archive and keep the information of our present time. Therefore, she has not yet released the 3D printable files of the artefacts because she is carefully seeking the right channels and support to do this. She is looking for a museum in the Middle East who could house these files, as she does not want them to be ‘open sourced’⁴⁵ to the public or for them to be archived exclusively by a museum in the West.

Next, Morehshin talked about people approaching her about *Material Speculation: ISIS* and trying to link it to other corporate projects, people telling her that this or that project does something similar to what she was doing. She asked the question, “What does it mean to have access to this data, what does it mean to have the ownership of this data? Because a lot of these companies make profit of this material, the 3d models [...] if they have a 3d scan, they only give private access to specific places. So this idea of what is shared universal heritage is something I have issue with and also how these tools are being used to mark this era I am calling Digital Colonialism.”⁴⁶

Dr. Ellen Pearlman

Dr. Ellen Pearlman is a new media artist, writer, critic and curator. A Fulbright World Learning Specialist in art, new media and technology, Ellen is on the faculty at Parsons/New School, Director of *ThoughtWorks Arts Residency*, President of *Art-a-Hack* and Director of the *Volumetric Society* of New York.

Ellen began her talk by reflecting upon when she first conceived the idea behind *Art-a-Hack*⁴⁷ (while she was learning physical computing) and the beginning of her collaboration with Andy McWilliams at Thoughtworks,⁴⁸ NYC. *Art-a-Hack* is a project that has been running for six years and supports teams from a variety of disciplines including art, technology, hardware and software development, design, immersive environments, music, theatre, animation, social justice and interactivity. The program matches participants selected from an open call according to skill-level, interest and concept. Teams are provided with equipment, facilitation and collaborative workspaces as they engage with a network of partners.

Throughout the duration of the project, *Art-a-Hack* has had over 110 people participate in the programme and Ellen presented both the methodology that underpins the project and a range of artistic projects that emerged from it. For her first example, delivered at Parsons, she explained that an open call format was used to access participants and the process received applications from about 70 people. Out of 70 people that applied, about 50 were invited to attend as the aim is to be inclusive and build teams around specific concepts. Participants travelled to New York from Atlanta, Baltimore and Canada.

Ellen then presented a short video that showcased a range of artistic and technology projects that have emerged from the *Art-a-Hack* projects to date. The video showed a variety of participants presenting the final outcomes of their *Art-a-Hack* experiences. Projects included explorations of E.E.G data, combining motion capture with theatre, investigations of the human ego through technological tools, creating full body avatars in VR and testing 360 sound and DIY hardware.

She explained that *Art-a-Hacks* are often delivered based around particular themes including; ‘The Accessible Brain’, for people with learning disabilities, ‘Another World’, which explored 360 video and VR, ‘Climate Consciousness’, again about climate change, and ‘Sentimental Feeling / Second Skin’, which investigated what happens when technology interprets our emotional states. However, other programmes have sought out ‘wide open ideas’⁴⁹ from participants, which has resulted in ‘a lot of strange ideas’⁵⁰ and breadth of critical, ambitious and playful projects including; a project that projected laser heartbeats onto the *Aurora Borealis*⁵¹, *Deep Thought*⁵² which explored ways to turn brainwaves into 3-D sculptures, *Imbalances in Tech*⁵³, a phone-based project promising the user access to “privilege on demand”⁵⁴ of gender, race, ethnicity and class in the tech sector and *The Multi-Faceted Bass*⁵⁵, a collaboration that transformed an acoustic bass cello into an electronic instrument.

Ellen then described her experience of delivering *Art-a-Hack* in St Petersburg, Russia, as part of CyberFest 2018. She noted that the idea of artist-as-genius was very strong and there was a need to work closely with the participants over two weekends. Out of three case studies shown (*Blink of an Eye*⁵⁶, editing a YouTube video in real time by blinking; *Holo Sapiens*⁵⁷, classic imagery made holographic through intelligent AI and *Word Cloud*⁵⁸, where the tone of speech becomes Russian supremacist imagery) she highlighted that *Holo Sapiens* was picked up by *Tate Museum’s Tate Exchange* program⁵⁹, noting that the work was produced over only two weekends. In other words, not everyone has to be a technologist, facilitating artists to team up with technologists and bringing a lot of different people into the mix can result in interesting work.

Ellen touched upon the underlying methodology to *Art-a-Hack*, that she has written about extensively, which has drawn upon Latour’s actor-network theory⁶⁰. She explains that Latour’s theory really helps facilitate how the hacks work. Technologists know things break and often don’t function correctly and that’s part of hacking network theory. She describes using the methodology when she delivered the project at Parson’s and teamed up with the *Cyborg Foundation*⁶¹, who are real Cyborgs. They engaged in an open collaboration, which meant that both professionals and students participated in the project. They were asked to reimagine themselves as a cyborg and design actual sensor implants. Ellen invited the cyborgs Neil Hardison and Moon Ribas to engage remotely during the project and asked special guests, such as Viktoria Modesta⁶², a bionic performance artist, “exploring modern identity through performance, fashion, avant-garde visuals, technology and science”⁶³. to come in to talk with participants.

Analysis

These presentations demonstrate a range of novel tools and methods for contemporary art making including; 3D printing, art hacking, iteration and prototyping. They appropriate the language of creative innovation in order to describe processes and methods primarily used within commercial digital contexts but modified to produce artistic and creative rather than commercial outputs.

Collaboration emerges as a key method used by the presenters. In the case of Ayo, working with Salome Asega is critical to the Iyapo repository because of the different skills they bring to the project (including participatory art) and those they have gained along the way (including digital fabrication), Baltan Labs invites collaborators from around the globe and from across disciplines to work alongside people in their home city of Eindhoven. Morehshin’s work is her own, and she creates much of her content, but her practice is supported by researchers, archivists and additional 3D modelers to build robust digital artefacts that realise her artistic intent to a desired standard.

Irini re-imagined the museum as a site to bring professionals from art, technology, science and industry together with the general public. In doing so, they explore the problematic complexities that underpin everyday technologies and invite audiences to take a critical stance when considering their role and impact. Ellen brokers interdisciplinary collaborations between self-selecting participants within a variety of contexts including a commercial software company and a university.

Threads that ties these artists and curators together include a drive to explore technologies in a critical way; to facilitate dialogue that interrogates, highlights and sometimes disrupts the cultural, social and ecological implications of our collective use and increasing dependency on technologies— all while engaging with diverse audiences in the public realm. Several of the contributors mentioned their desire to highlight the role the arts have in tackling ‘wicked problems’ and to reconsider technology as more than just a way to satisfy consumer demands, aiming to expose its invisible impacts. Many of the speakers are exploring and devising new methods that bring disparate communities of people together to reclaim and shape a collective future vision.

As presenters and authors, Suzy and Victoria are applying and showcasing this research to demonstrate ways in which artists and curators are creating approaches that can be critical of technology and innovation while also working within and alongside commercial sectors that employ technology and innovation strategies as business. Curators are able to take a unique role, brokering relationships between artists and businesses, or creating unique contexts where dialogs and new works can grow and develop. Artists bring their technical skillsets, existing practices, and a willingness to make connections between technical tools, ideas and participants. They do so in unique contexts while creating outputs that showcase new combinations of tools, techniques and ideas.

Conclusion

Hacking and making strategies are being implemented by artists and curators to bring criticality to digital fabrication, 3D printing and other art and technology tools. Through methods including activism, hacking, participatory art and workshopping, the practitioners showcased here demonstrate critical and compelling projects that question innovation and applications of technology for the sake of commerce alone. The breadth of projects presented include ways in which art, technology and innovation can work within and alongside one another and offer creative and financial support for emerging contemporary art practices.

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VICTORIA BRADBURY BIO

Dr. Victoria Bradbury is a new media artist and researcher who creates interactive installations, virtual reality artworks and performances. She is Assistant Professor of New Media (interactive) at The University of North Carolina Asheville. Her website is: www.victoriabradbury.com.

SUZY O'HARA BIO

Dr. Suzy O'Hara is a curator and researcher based at University of Sunderland. Through her practice, she interrogates evolving relationships between art and technology and investigates interdisciplinary and cross-industry models of curation that both utilize and inform innovation-based strategies.

ENDNOTES

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