

TRUST ME, I'M AN ARTIST: BUILDING OPPORTUNITIES FOR ART & SCIENCE COLLABORATION THROUGH AN UNDERSTANDING OF ETHICS

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Abstract

This article explores how learning from the Creative Europe funded *Trust Me, I'm an Artist* Project [1], and from the author's experiences as project lead artist and as a freelance artist working deeply embedded in laboratory settings around the world, can help build capacity and opportunities for artists and scientists to work together in interdisciplinary and transdisciplinary collaborations that address the societal and cultural implications of emerging bioscientific and biomedical research areas, attitudes to patient care and public engagement in contemporary scientific research. Ethical issues frequently arise in the production and exhibition of BioArt both as a subject matter and an issue in itself.

We are in an age where cutting-edge technologies in the so-called 'life sciences' are being used to make new discoveries on an almost daily basis, particularly in the field of genomics. But the general public are increasingly detached from that research, as technical language and lack of education are a huge barrier to entry. This results in great misunderstandings around contemporary scientific fields such as synthetic biology, the human microbiome, regenerative medicine, bioinformatics and genomics, and means that the majority of people are not able to participate in any kind of considered way in ethical debates around new technologies, to help decide if these technologies are something we (as a society) want, something we should protest against, or indeed something so urgently needed that it must be immediately supported and pushed ahead with. How are the public to understand issues such as antimicrobial resistance (AMR) when they are at the mercy of the fear-mongering tabloid press and advertisers selling hand-sanitizers and even our so-called leaders, from politicians and healthcare organisations to scientists and doctors cannot agree on how to best deal with the issue.

A Potential Role for Art

Art can have a role to play in engaging the public in research. By this I do not propose that artists become publicists or persuaders for scientific research that may or may not prove to be beneficial in the long term. I do not suggest artists become illustrators of scientific theories and definitely do not suggest that artists use their skills to help create attractive digital data visualisations, unless this is their interest and key to their practice rather than a response to what is being asked of them.

When artists engage at a deep level with an area of research they have the possibility to explore and critically interrogate that field in a number of interesting ways, bringing together aesthetic sensibilities such as beauty or disgust with intellectual complexity. They can explore ethical dilemmas such as the risk of the potential misuse of the emerging gene editing technology known as CRISPR in bioweapons or crime set against its importance in understanding genetic diseases or cancer, perhaps even leading to cures for such diseases.

Artists also have the ability to reach out to audiences that self describe as 'non-scientific' as we have seen from the major efforts by organisations such as Eden Project in Cornwall in the UK and its exhibition and events programme around the semipermanent BioArt focussed exhibition "Invisible You: The Human Microbiome" which explores contemporary re-

search into the bacterial life that co-exists with us. It is an invisible (micro) biome set alongside their vast Mediterranean and Rainforest Biomes, forming the largest greenhouse in the world and visited by around one million visitors per year, most of whom fall into the non-scientific and often low income category, including older persons, tourists and school groups. Issues like antimicrobial resistance, the potential end of the antibiotic age and ecology are hugely important to these audiences and visitor numbers and workshop attendance are indicators of their desire to know more and to be brought into these ideas and issues in accessible ways that enable understanding.

Artists take on an aspect of being anthropologists, studying the culture of that field by becoming embedded but also with one foot outside, ready and willing to be interrogated by the rest of us about what they have seen and experienced.

Embedded Artists in Labs and Healthcare Settings

The presence of artists in labs and healthcare settings is important for those artists who are interested in working hands on with bioscientific tools or engaging with issues of healthcare and it is very important for the scientists, medics and healthcare workers whose lives they touch. It creates freedom to think in new ways or to reflect on issues in their work or field especially in terms of the cultural or societal implications of their work. Moves towards encouraging public engagement in science as part of judging the 'impact' of that science, for instance in the UK's Research Excellence Framework [2], has helped to create a new generation of scientists who are excited to work with artists, and in particular with those who have made efforts to deeply understand their relevant areas of research, though there are still difficulties in quantifying the impact of such projects as their reach can be much further than it is possible to quantify easily.

My own experience has been that over the past 20 years I have embedded myself in biomedical research, in particular in microbiology and more recently genomics and synthetic biology. I trained in Fine Art, however my scientific knowledge has been developed by visiting labs, by shadowing research, participating hands on, learning how to do it myself, and developing work through that process. I particularly enjoy the quiet 'boring' moments between lab processes, when myself and my collaborator are waiting around for biochemical reactions to take place that are a frequent part of every experiment protocol as this is when our most interesting and wide-ranging conversations can emerge. These experiences led to the initial *Trust Me, I'm an Artist* pilot project [3] and book [4].

Another fascinating aspect, highly relevant for *Trust Me, I'm an Artist* that I have been able to observe is how laboratories differ dramatically even within the same field and risk level, and how much that increases when you look internationally. This relates to what one can wear, for instance fire proof lab coats in one place and no lab coats at all in others; hair must be tied back or not (not specifically related to the risk involved); in some places skirts cannot be worn and in others everyone wears shorts. The style of the person in charge can have an impact for example some labs are silent places where to do not want to breathe too loudly and some full of chatter and music. Even the age of the lab affects things, for instance where the building structure does not permit usual bio-containment procedures a makeshift 'airlock' might be created by drawing on the floor with hazard tape.

You can find very different approaches to health and safety in labs around the world for instance you might be able to drink in the lab in a sanctioned area in some places and in

others that would be very shocking. The UK is highly risk averse for example and some might argue too risk averse so that people do not want to take responsibility for decisions especially around the nature of an artwork. The culture of the country the lab is in affects ethical decisions, for example in Egypt I was told that you cannot 'own' your own body, therefore you cannot donate it to science, which makes human cell research complex and would have a dramatic impact on the work of artists like Gina Czarniecki and her *Trust Me, I'm an Artist* commissioned artwork "Heirloom" [5].

It is these kind of subtle differences that the Creative Europe supported *Trust Me, I'm an Artist* project has sought to unpick through working with different European partners, and moving forward we are keen to use the DIY *Trust Me, I'm an Artist* Pack we have produced to encourage artists, curators, students, and academics around the world to set up their own events and share the outcomes with the community.

My residency with the Liu Lab for Synthetic Evolution at University of California Irvine (USA) as part of the WETWARE [6] exhibition at the Beall Center for Art & Technology curated by David Familian and Jens Hauser, explored gene editing technologies used to create antibodies that could not possibly be produced in nature and explored how mutation could be artificially speeded up in a living organism (a yeast). I worked with media that in the UK would be very difficult to display but I was able to easily exhibit my synthetic biology artworks there as rules and attitudes to genetic modification are very different (Fig. 1).

Through my collaboration with Professor Maggie Smith at the University of York (UK) I built on this work to explore how the viruses that infect bacteria can be used to actually edit the antibiotic pathways of those bacteria to create custom antibiotic producing organisms [7]. The outcomes of this work have featured as part of a large-scale growing participatory work created as part of Oxford Museum of the History of Science's "Back from The Dead: Demystifying Antibiotics" where I am working with members of public from diverse backgrounds to explore the issue of antimicrobial resistance,

Fig. 1. "Engineered Antibody" synthetic biology methods, 21 amino acids, polymer clay, coomassie blue dye, embroidery. (© Anna Dumitriu. Photo: Anna Dumitriu.)

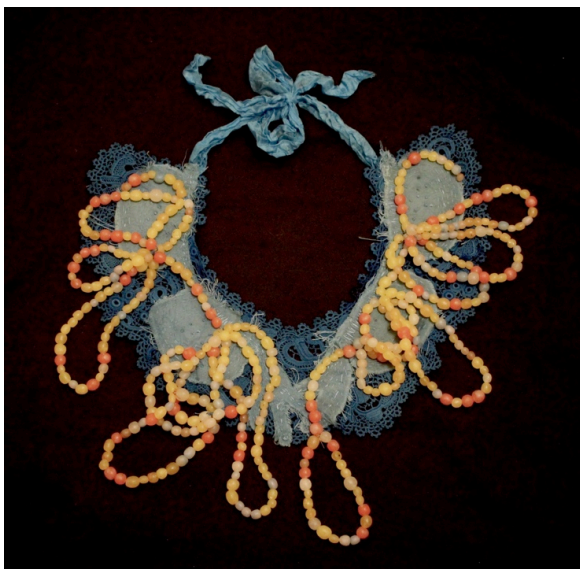


Fig. 2. "Ex Voto" (detail), Aluminum, *Streptomyces coelicolor* with antibiotic pathway edited using phage integrases, and antimicrobial dyes (© Anna Dumitriu. Photo: Anna Dumitriu.)

also in collaboration with Dr Nicola Fawcett (Modernising Medical Microbiology Project) at The University of Oxford (Fig. 2). The organisms have to be killed prior to exhibition in the UK.

Conclusion: Capacity Building and Curatorial Processes

The aim of *Trust Me, I'm an Artist* has, above all, been about capacity building. It is important for all of us as a society to widen up debates, share stories, concerns, and new discoveries, which have ethical importance, and we need to do this through art, which has the possibility to be highly accessible whilst still retaining layers of complexity. Many artists work with emerging technologies, revealing weak signals from the future, highlighting issues, technologies, and practices that we need to think about prior to their implementation.

The media and the public have shown to be increasingly excited by work in the field of BioArt when they have access to it. By working with international partners in significant settings and disseminating the results widely online and through social media we are asking the international art community to think and act bravely in the display of this type of work, to enjoy the challenges it raises, to learn from our experiences and to ensure that we might all benefit from a better shared understanding of the art and science of the world we inhabit.

References and Notes

1. *Trust Me, I'm an Artist: Developing Ethical Frameworks for Artists, Cultural Institutions and Audiences Engaged in the Challenges of Creating and Experiencing New Art Forms in Biotechnology and Biomedicine in Europe* is supported by funding from Creative Europe and is a collaboration between Waag Society, Brighton and Sussex Medical School, Arts Catalyst, CIANT, Kapelica Gallery, Medical Museion, Capsula and Leonardo/Olats. The lead artist on the project is Anna Dumitriu, and the lead ethicist is Professor Bobbie Farsides. More about the project can be found at <<http://trustmeianartist.eu/>>.
2. <<https://www.gov.uk/government/news/lord-stern-sets-out-proposals-to-protect-and-strengthen-university-research>>.
3. <<http://www.artscienceethics.com/>> and <<http://artscienceethics.tumblr.com/book>>.
4. Dumitriu Anna, Farsides Bobbie, *Trust Me, I'm an Artist. Towards an Ethics of Art and Science Collaboration*, Blurb Edition, 2014.
5. [1].
6. <<http://beallcenter.uci.edu/exhibitions/wetware-art-agency-animation>>.
7. <<http://www.normalflora.co.uk>>.