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8 Art as method

Abstract: Heather Dewey-Hagborg describes the approach of artistic research through a personal account of her own artwork. In "Stranger Visions," she created life-sized 3D portraits from found DNA samples to provoke public reflection on genetic surveillance and the emerging field of forensic DNA phenotyping. Her work demonstrates art's potential to engage non-academic audiences in critical discussions about biotechnology and its societal implications.

Keywords: artistic practice, DNA phenotyping, privacy, genetic profiling, research-based art

How much can I learn about a stranger from a shed hair? Could you fall in love with someone by analyzing their DNA? Could a virus spread affection and combat hate? These are the kind of questions that intrigue and motivate me as a research-based artist focused on biotechnological futures.

What might art contribute to criminology? While scholars probe issues and emerging techniques in journals and conferences, artists can bring different audiences into a confrontation with these important ideas.

Since the 1960s Conceptual artists have been working with ideas as a primary medium or starting point for practice. This has given rise to a multitude of new artforms including archival practices, research-based art, art and science, and speculative design, among many others. These approaches are as variable as the artists who use them, but the work which interests me uses science and technology as a medium for artistic practice to ask questions regarding accuracy, ethics, and societal impact. Artistic practice can create a space of self-reflexivity, cultural critique, and has a great potential to challenge passivity and the status quo.

In the pathbreaking anthology on art and biopolitical activism, *Tactical Biopolitics* anthropologist Joseph Dumit opens the collection by describing its focus: "Bioartists articulate life to make biology an object of recognition and concern for all; activists reconfigure lines of authority, knowledge, and regulation to change how concern about life operates." (Da Costa and Philip, 2008, p. xii). From this vantage point then

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we can see art as a tool to explore criminological issues and tenets and to probe their manifestation and impact, both present and potential.

My own artistic practice has focused from 2012 on the biological, with a special attention to genomics, ideas of identity derived therefrom, privacy, and surveillance. This has led me to deep explorations of topics like DNA profiling, forensic DNA analysis, DNA mixture analysis, forensic genealogy, and phenotyping (see DNA/Big Genome Data by Kaufmann).

In 2012 I was sitting in a therapy session introspecting, when I noticed the glass covering a print on the wall of my therapist's office was cracked and there was a hair stuck in the crack. I sat there for the hour staring at this hair and imagining the person who may have left it. When I left I noticed forensic artefacts everywhere I looked, cigarette butts on the sidewalk, people clipping their nails on the subway, shed hairs in the bathroom. People were leaving traces of themselves all the time without giving it a second thought. I knew that services like 23andme DNA sequencing and analysis were becoming cheaper, faster, and more accessible. And I began to wonder what the social impact would be of these advances in genomics on our sense of self, our idea of our own identity, and biological privacy.

On March 1, 2012 I began collecting samples. I carried gloves and Ziploc bags around with me and every time I spotted a hair I would grab it, marking the date and time and snapping a picture of the location. Soon I expanded to cigarette butts and chewed up gum as well.

I brought these samples to the world's first community biology laboratory, Genspace, which had opened in Brooklyn, NY. There I took a 'biohacker' class where I learned to extract DNA, amplify and analyze it. I bought a forensics kit, and after much experimentation, began to get legible results from my found samples.

I wanted to confront people with the potential lurking in their genomes. I researched deeply into the emerging science of forensic DNA phenotyping and examined articles analyzing traits like sex, eye and hair color, and ancestry from forensic samples. I put the genetic loci mentioned in this literature together with a dataset of SNPs (variations in a genetic sequence) that companies like 23andme were correlating with traits, and I pulled together as many emerging publications on genotypes related to appearance as I could find.

I had worked with facial recognition algorithms in the past and I knew they could be re-purposed to generate faces as well, which was an inspiration for the new project. I built on an open source codebase from the University of Basel intended for 3D facial recognition. This model had the capability to generate 3D faces based on different traits like sex and age. I expanded the Basel model with additional facial recognition training data and included parameters like eye color, freckling, facial shape, and skin color. From strangers' DNA profiles I could feed probabilistic parameters into the Basel model to generate possible faces. I would generate several different portraits of each sample representing both a probability of interpretations and random variation. For example if a person had 60 % chance of having blue eyes and 40 % chance of having brown eyes the code could reflect this probability.

As this was an artwork and to some extent a speculative design project anticipating a future technology, I didn't worry too much about getting everything perfectly worked out. I incorporated a lot of randomness into the faces I generated and chose the portraits that called out to me. Maybe they reminded me of someone I had seen or made me feel something when I looked at them. This was my artistic subjectivity influencing the process.

I began generating possible faces derived from found DNA and exhibiting them as life size full color 3D printed faces, along with the samples and information about when and where and what data I was looking at. I called the piece *Stranger Visions.* While scholars of criminology or Science and Technology Studies primarily produce texts describing these new techniques, this artistic production brought viewers and a broader public into a visceral, personal confrontation with the possibilities of DNA phenotyping. Specifically it provoked viewers to think—"that could be me, that could be my DNA," and to have a reaction. Some thought it was cool, some thought it was a horrible invasion of privacy, and some thought it was a clear portent of the dystopian science fiction future that awaits us. My motivation was primarily to get people thinking about the potential for genetic surveillance. As genetic profiling methods become cheaper and more widespread we face an uncertain future in which we know a great deal more about this particular aspect of ourselves, of our identity, than ever before. This also opens the potential for others to 'know us' in this way, surreptitiously or openly.

Secondly the piece made the little known emerging technique of DNA phenotyping visible to the public. By showing these faces together with the data they are derived from it shows how little we actually are able to know about even things as simple as visible traits based on current genomics (as of 2012 when I made the piece).

The presentation of the work is relatively simple. The portraits hang on the wall in a line, the boxes displaying the samples and data sit below on pedestals. In my experience with the work, this simplicity allows a diversity of interpretations which also were easily picked up on by the media.

The work has been exhibited around the world from museums of modern art to science festivals and policy venues. It was widely discussed in news including in the *New Yorker*, *Wall Street Journal*, *New York Times*, CNN, BBC, and more. The incredible breadth of exposure this work received, the vast numbers of people who were exposed to it directly through exhibition, and indirectly through media and memes, is enormous. I mention this because in cases like this, where an artwork hits a nerve in popular consciousness, it has a tactical interventionist effect; media completes the piece and the message has a chance to spread far and wide. In this case the artwork can be thought of comprising the sculptures and artefacts, along with the media reports, interviews, short documentaries I participated in about the making of the work, exhibition texts, and short essays I have written over time. Each of these adds another element to the project, although most are to some degree out of my complete control. I embrace the multitude of interpretations and opinions as an artist, and I think even, or perhaps especially, the critical takes are very important. When audiences see *Stranger*

Visions and think it is an invasion of privacy, or think I shouldn't be allowed to do such a thing legally, they enact the public function of the work to spark critical thinking and agitation for regulation and social discussion.

The work has its limitations, and some of those limitations are also part of what has made it successful; it is simple, easy to understand, and reductionist. It puts a face to a DNA sample and clearly states the threat to privacy this might represent (see Privacy and Data Protection by Bygrave). It glosses over the complexities of interpretation and this makes it easier to digest and relate to viscerally. I unfolded some of these complexities in later works like *Probably Chelsea* where I presented 30 different portraits of the same individual, the whistleblower Chelsea Manning, based on one DNA sample. This piece physically demonstrated the probability space from which I had chosen my faces in *Stranger Visions.* Chelsea and I began working together while she was in federal military prison and could not be visited or photographed. She sent me hair clippings and cheek swabs and I produced an initial pair of DNA portraits to represent her. Because Chelsea is transgender we decided together that this work could challenge some of the reductionism inherent in most DNA profiling, assuming for example that sex can be unproblematically assessed from genes. Later, to celebrate her release from prison after President Obama commuted her sentence, we expanded the work to 30 portraits showing a vast range of different possible interpretation of her genetic data.

In this way, we can see how art can engage a broad and diverse audience in issues around science, technology and policy. Even when a work is seen by a much smaller audience than I have described and doesn't have such a media propagation, it is still, always, another audience, another public, that is not likely to read academic papers in criminology or Science and Technology Studies. It is always a way of bringing topics to new eyes and often, I find, in the process I come to understand the issues with more complexity than I ever imagined before delving in.

Suggested reading

Da Costa, B., & Philip, K. (eds.) (2008). *Tactical Biopolitics: Art, Activism, and Technoscience.* Cambridge: MIT Press.

Kac, E. (ed.). (2007). *Signs of Life: Bio Art and Beyond.* Leonardo. Cambridge, MA and London: MIT Press.

Reference

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