

Genomix Mask: Examining the complex relationship between Genes, Epoch, and Aesthetics

Pat Pataranutaporn¹, Bank Ngamarunchot², Galina Mihaleva³

¹Arizona State University, ²Futuristic Research Group (Freak Lab) at King Mongkut's University of Technology Thonburi,

³Nanyang Technological University

¹Thailand, ²United States of America, ³Singapore Contact

ppataran@asu.edu



Anthropocene

Here we explore ANTHROPOCENE (Pat Pataranutaporn)



Capitalocene

Capitalocene: Capitalocene (Bank Ngamarunchot)
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Capitalocene: Capitalocene (Bank Ngamarunchot)



Plantationocene

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Chthulucene

Chthulucene: Chthulucene (Galina Mihaleva)
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Abstract

Genomix Mask is the collection of masks fabricated by a collaboration between AI and the authors. It intends to tell four ages of the world: Anthropocene, Capitalocene, Plantationocene, and Chthulucene. In the beginning, people can use technological power to extract resources and wellbeing from the world. However, over extraction and exploitation emerged and negative consequences existed. Therefore, Donna Haraway proposed us to make kin with nature. Authors interpret “making kin” by infusing DNA of humankind and animals (i.e. iguana, monitor, virus, and octopus) as a representative of nature. Ironically, to reconcile between human and nature, we need help from an ‘Artificial’ Intelligent (AI). To some extent, it says that it is an un-thought of ours. How AI contributes to this work? It learns heat-map of DNA and styles of animal organism and then generates many infused patterns that we can use to recompose as a mask.

Keywords

Genes, Epoch, Genome, Aesthetics, Anthropocene

Introduction

This exhibition deliberates on the interplaying between technologies, nature and humankind. Since the Anthropocene emerged, human reached to technology that can control major parts of geography and society were

separated from nature. Mental model that we are not a part of natural things makes possibility to exploit them as commodities. After a capitalism was established, capital and its accumulation was a center of world-system. It was not just the economic relationships, but also the way of organizing nature and our daily life (Moore, 2016: 6).

To put it simple, capital accumulation creates prosperity at expense of human (i.e. labor and small capitalist) as well as nature. Particularly, the latter case is really damaged by its own characteristics. First, it cannot express in term of ‘real’ price. To be sure, there is a market price of nature; however, it might not include real value of things. The value of them for other fabricated living things or even plants in this world. Second, nature had high tolerance. Alas! Its patient has limitation. Beyond some threshold, it might strike back. Global warming and other catastrophes are strong signals of this theme.

Therefore, alternative voices are needed. Donna Haraway called for a making kin with nature (Haraway, 2015: 161). For her, bringing human back to be a part of nature are necessity, but it surely is not a smooth pathway. We must face monstrous reactions during this becoming epoch – Chthulucene. Whether we agree or disagree with this proposal, the urgency of environmental crisis and alienated roles of human from nature are inevitable.

But, how to make kin with nature scientifically? One way to think about this issue is practical infusing “our” DNA with animals and plants. However, it is ethically and legally wrong (or at least too much controversial). Therefore, in this paper exhibition, we will just computationally infuse human’s genes with natural things. Then, we will use various patterns of visualized results as the artistic materials to create the mask, so called “Genomix Mask.”

We will use this Genomix Mask to illustrate this path to dystopia (from Anthropocene to Capitalocene) and some proposal for saving the humankind (Chthulucene). The mask is important feature because it usually closely covers our face and perspectives; however, we do not recognize it and could not see its details. If we deliberately look into the mask, we intended to represent warning signs into it. We hope that people can get the message and evolve for our survivals. Word Processing Software As detailed below, ISEA has prepared and made available a Microsoft Word template for use in formatting your paper. If you are using some other word processing software, please follow the format instructions given below and ensure that your final paper looks as much like this sample as possible.

Methodology

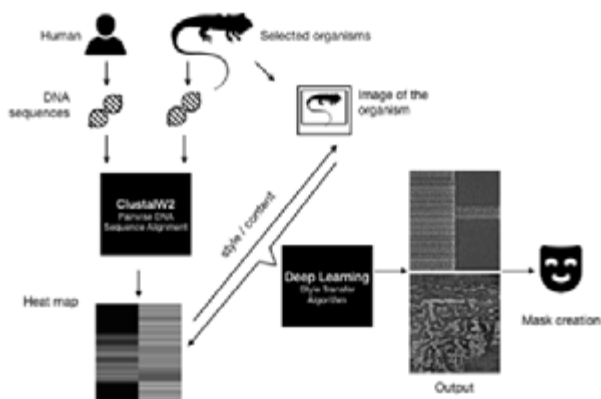


Figure 1: Technical outline of the Genomix project consists of three major steps : data collection, sequence

To illustrate connections between human-in-nature and nature-in-human, across these periodization: Anthropocene, Capitalocene, Plantationocene, and Chthulucene, we infuse many DNA from different organisms alongside with human’s DNA to create the masks. The process of transforming DNA into art piece starting with using ClustalW2 DNA sequence alignment algorithm to compare nucleotides (A, T, C, G) from human DNA and DNA from other species. The similarity between two distinct DNA is

used to generate a heat map visualization that show the similarity and distinction between two distinct DNA. We then stylize the visualization using deep learning style transfer algorithm (Gatys: 2015) to transfer the texture from the picture of the selected organisms on their DNA and vice versa. The deep learning network was pre-trained on VGG-16 model with 16-19 weight layers and 3×3 filters in all convolutional layers. The weight content / weight style is optimized to 8.5, 3.0 and the algorithm was performing 30 iterations. After the stylization, the visualization was used as visual elements for the artist to put to assemble the masks. In addition to the masks, second skin layers were created made from stretch textiles embedded with haptic feedback, that corresponds to the wearers thoughts. This process is bio-inspired by the transcription process in living cells. On the philosophical level, our process depicts our motivation to supersede ourselves into the masks that we create. On the other hand, like a mask, they superficially cover us. This contradiction is not a problem per se. Actually, incompatible between human and nature is really realistic and unavoidable.

Interpretation

Anthropocene refers to an epoch that humankind had capability enough to exploit and control geological nature. Coal mining and steaming machines, for instance, were signifiers of geological controls. Competition to utilize nature existed both in capitalism and communism camps; therefore, we use genes of people in England (where industrial revolution and practical capitalism took place) and Soviet (where communism is a part of its ideologies) as a representation.



Figure 2: Anthropocene mask, which created from mixing England and Soviet people together

Plantationocene is a subcategory of the capitalocene. It refers to a system of plantation or plant-production system. Labors generally are controlled by standard task, paces of machines, and incentive payment. We are all chained by the designed system. Foreign investment flows hugely after 1990s when the world economic system was unified, Soviet Union collapsed, and China engaged to be a member of the World Trade Organization. These investments came with, again, system of exploitation both on local labors and

natures. To some extent, it is a modern colonialism and slavery if it is not a primitive one. To reflect this situation, we use an african genes as a metaphor of repressive system.



Figure 3: *Plantationocene mask, which created by infusing genes of African people, cotton (*Gossypium hirsutum* mitogen-activated protein kinase (MAPK)), and clove (*Syzygium aromaticum maturase K (matK) gene, partial cds; chloroplast*)*

In Capitalocene mask (**Figure 4**), authors interpret that capital accumulation is not just an intermediary process, but it is a telos of a capitalism. During this period, capitalists emerged as a class and ones who have no capital are transformed to be a proletariat. Their labor power is alienated from themselves and sell as a fictitious commodity. Simultaneously, natural things and animals have no voices and subjectivity even if they are also exploited heavily. It inevitably leads us to negative consequences including natural disasters. To illustrate these falses, we choose three mutant animals as metaphors. Mutated iguana usually links to a strike back of nature in Japanese movie, Godzilla. Secondly, Varanus is often used as a synonym of badness in the Thai language. Finally, Eagle is a proxy of freedom, strong, and honorable. But, mutant eagle reverses these meanings. These distorted animals are still warning us silently from nowhere. As you can see, it is the deathful mask. People are left behind the iron wings and repressed by the black spear-like shape.



Figure 4: *Capitalocene mask, which created from infusing of Iguana, Varanus, Aquila chrysaetos, and human gene from their mitochondrion*

To heal and handle with unfavorable consequences of capitalocene, Donna Haraway proposed us to make kin with nature. Under this process of making kin, we need a patient which can be seen as a sickness and tolerate at the same time. There is no pleasure and easy pathways. We will face many cruel and fearful challenges like monstrous tentacles, therefore, we use genes of virus (invisible strike back of the nature) and octopus. The result existed in the **figure 5**.



Figure 5: *Chthulucene mask, wich created from infusing HIV virus, Zilka Virus, Ebola Virus, Octopus, and Human Gene*

Conclusion

Humankind used to be a part of the nature. But we continuously separated and finally ended up with overexploited it. This practice soon or later makes negative consequences to our destiny. Therefore, some scholars propose to reconcile and to remember as the nature. Transforming and infusing DNA of animals with human is allegory of this proposal. Furthermore, our work tries to experiment visualized techniques and develop them more and more, aesthetically and technologically.

References

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Author(s) Biography(ies)

Pat Pataranutaporn is a creative biologist, designer, coder and a student from Thailand at Arizona State University. He is enthusiastic in prototyping impossible things as he presented in his TED X talk "Prototyping the Impossible". His works examine the symbiotic relationships between human and technology beyond traditional contexts ranging from using AI to cope with mental health issues on social media, designing how human interact with DNA computer, and making bioinspired device that capture proteins from insects and convert them into 3D printed food.

Bank Ngamarunchot is a lecturer of KMUTT, Thailand. He is an Economist who works in many fields such as Political Economy and Public Policy. His recent works relate to negative consequences of capitalism such as monopoly, externality, labor exploitation, and inequality. He is also an owner of the art gallery (Tentacles) located in his hometown, Bangkok.

Galina Mihaleva grew up with a passion for fashion and art; she studied costume design at Arizona State University and the Arts School in Sofia with a Master of Art degree specializing in fashion and textiles. Her interest in fashion lies in exploring the extent to which we experience fashion and how we might be able to accomplish a higher state of connectivity between the body and our clothing. Her art has been shown in festivals, galleries and museums across United States, Asia, Central and South America and Europe. In 2007 she was nominated for the best design award at Cooper- Hewitt Design Museum.