Beyond Speculation:
Understanding the Political Nature of Design with Dreamatics Inc.

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ABSTRACT

This paper explores the integration of Speculative Design and Science, Technology, and Society (STS) research, framing the discussion through the lens of the fictional company, Dreamatics Inc., which utilizes AI in genetic engineering. The paper examines how speculative design, which uses design as a form of critical thinking to explore future possibilities, merges effectively with STS. The latter field, rooted in the exploration of the mutual influences between society and technology, provides a critical framework for understanding and questioning the social, ethical, and political implications of technological advancements. Through the case study of Dreamatics, this paper demonstrates how speculative design can be adopted to provoke discussions and emphasizes the necessity of a multidisciplinary approach to comprehensively evaluate technological influence on society.

Keywords

Speculative design, Science, Technology, and Society (STS), worldbuilding, artificial intelligence ethics.

1. INTRODUCTION

Speculative Design and Design Fiction, as introduced by Dunne & Raby and Julian Bleecker respectively, serve as innovative methodologies designed to rethink and challenge current technological and social norms. These approaches empower designers to visualize future scenarios that deeply reflect human nature and dynamic socio-cultural interactions. This paper explores how these methods effectively intersect with STS research and delves into the critical role of speculative design in questioning and analyzing the complex landscape of future technologies.

2. RELATED WORK

2.1 Is This Your Future?

Dunne & Raby's 2004 project, "Energy Gallery: Is this your future?" is an installation exhibition at the Science Museum in London. The project aimed to provoke visitors to think about the future of energy consumption and its environmental and social impacts. Through a series of speculative designs and scenarios, Dunne & Raby presented an alternative vision of energy use, challenging the audience to reconsider their relationship with energy and imagine different futures. The installation combined design, technology, and narrative to engage visitors in a dialogue about the choices we make today and their impact in the future (Science Museum Group, 2019). This work is an example of how speculative design can be used as a tool for critical reflection and public engagement in social issues.

Figure 1. Is This Your Future, Dunne & Raby, 2004

2.2 Apply Now!

The paper "Apply Now! Fictional Job Postings as an Instrument to Discuss Interactive Futures of Work" by Verena Fuchsberger, Thomas Meneweger, Daniela Wurhofer, and Manfred Tscheligi explores the use of design fiction through fictional job postings to provoke discussions about the future of workplaces. The fictional job postings, created for roles such as future operators, maintainers, and engineers, serve as a tool to engage stakeholders and the public in debates about potential futures in production facilities. The study highlights the opportunities and challenges of using design fiction as a communicative means, including the ability to trigger controversial discussions, create alternative visions, and explore the degree of fiction (Fuchsberger et al., 2017). The work concludes that fictional job postings can facilitate critical thinking on the future of workplaces and practices, providing a new way to engage with possible futures.

2.3 An Ikea Catalog from The Near Future

The "Ikea Catalog from the Near Future" is a speculative design project created by Near Future Laboratory, a design and research studio. This project reimagines the iconic IKEA catalog as a window into future living scenarios, showcasing fictional products and services that address potential social and technological shifts. The catalog presents a playful exploration of how everyday objects and environments might evolve in response to emerging trends such as automation, sustainability, and changing family dynamics (Near Future Laboratory, 2015). By blending the familiar format of an IKEA catalog with speculative design elements, Near Future Laboratory invites readers to reflect on the future of home life and the role of design. This work highlights how speculative design can be used to engage the public in discussions about possible futures and the implications of current design and technological choices.

Figure 2. An Ikea Catalog from the Near Future

2.4 (Im)possible Baby

The "(Im)possible Baby" is a MIT speculative design project by Ai Hasegawa, which was created in collaboration with the U.S. genomics company, 23andME. The project's foundation is rooted in a series of digital CGI images and the development of the "speculate your baby" software. The images serve as a prototype for the speculative design, challenging traditional notions of families and prompting discussions on the ethical considerations of genetic editing technologies (Hasegawa, 2016). This project delves into the potential for same-sex couples to have genetically related children, a possibility that is increasingly feasible due to advancements in genetics and stem cell research. By analyzing and visualizing the DNA data of a lesbian couple, the "(Im)possible Baby" seeks to inspire debate about the bioethics of producing babies from same-sex couples.

Figure 3. CGI Creations in (Im)possible Baby, 2016

3. THE INTERSECTIONS OF SPECULATIVE DESIGN AND STS RESEARCH

3.1 Speculative Design and Design Fiction

Speculative design was introduced in Dunne & Raby's book "Speculative Everything". In this book, Dunne & Raby encourage designers to explore future possibilities through critical thinking (Dunne and Raby, 2013). Design fiction, on the other hand, was established mainly through the book "Design Fiction: A Short Essay on Design, Science, Fact and Fiction" by Julian Bleecker in 2009. Bleecker explains that fiction is built on fact. Just as science fiction can be traced back to popular science, design is also a synthesis of scientific facts and fiction. Through the creative process of design and storytelling, people can break free from the limitations of reality (Bleecker, 2009).

When people talk about speculative design and design fiction, "science fiction" is often cited to help people understand the initial concepts. There are many design works that demonstrate great narrative abilities as those in science fiction movies, showing people's imaginations about technology. However, as most science fiction authors claim, science fiction is not just about technology itself. A good science fiction work derives its value not only from its excellent imagination of technology but also from its reflection on human nature and socio-cultural aspects.

For example, in the movie "Gattaca", despite being deemed genetically inferior to his brother at birth, Vincent manages to outperform him in several swimming races; in another movie "Her", despite artificial intelligence possessing (and even surpassing) human cognitive abilities, the world still needed humans to carry out traditional tasks like ghostwriting letters; and in "Minority Report", although John was able to control complex information through a holographic interface, he still had to deal with the annoying advertisements on cereal boxes. In these science fiction stories, whether it's unexpected victories, touching handwritten letters, or annoying commercials, each element is rooted in its own cultural context and interacts with technology to create a blend of novelty and familiarity. Just as science fiction has evolved from the sterile, pristine imagery of airtight cabins to the chaotic, oil-stained aesthetic of cyberpunk, these "impure" elements—when mixed with society and technology—have come to define the very essence of science fiction literature.

Traditionally, designers tend to be more familiar with technological aspects. Their hands-on experience with materials, tools, and prototyping equips them with a deeper understanding of technology's potential. However, when it comes to social and cultural aspects, speculative designers often rely on their own expertise and experience to engage in relevant discussions, leading to a lack of systematic social research approaches in the field. Therefore, just as UX/UI design incorporated psychology and critical design adopted phenomenology and critical theory, speculative design should also integrate an established discipline to enhance its exploration of technology and society.

3.2 Breaking the Binary: STS Research

"Science, Technology, and Society" (STS) is a research field that began to develop in sociology in the 1960s (Banks, 2014). Initially, STS focused on science and technology as subjects for sociological study, exploring how society, politics, and culture influenced scientific practices. As the field evolved, it began to examine the mutual shaping of technology and society, transforming into an interdisciplinary research area that encompasses anthropology, political science, history, geography, philosophy, and sociology. In other words, STS aimed to challenge the traditional separation of "science belongs to science, society belongs to society," and re-examine the previously overlooked relationships between technology and society.

In the book "Leviathan and the Air-Pump," Steven Shapin and Simon Schaffer explore the social aspects of experimental science in the seventeenth century. They pointed out that an experiment is not just about achieving experimental success; it must also be a compelling "performance" that is witnessed by others during the experiment. For example, in Boyle's famous vacuum experiment, he had to not only assemble precise equipment to evacuate the air but also create dramatic effects to make the vacuum visible. Thus, the crucial elements of the experiment weren't just the air pumps, but also the spherical transparent glass vessel serving as the stage, the suffocating birds acting as the performers, and the celebrities forming as the audience. These components were all crucial for Boyle to convincingly demonstrate the creation of a vacuum. In

essence, the practice of science and social factors are intertwined; conducting an experiment involves both technical manipulation and social interactions (Shapin and Schaffer, 2006, Mandarin Version).

Figure 4. Joseph Wright, An Experiment on a Bird in the Air Pump, 1768. The painting captures the dramatic performance of the air pump experiment.

By challenging and redefining the traditional binary relationship between science and society, STS offered a new perspective on science and technology. While some scientists initially saw STS as a "confrontation from social science to natural science," the field isn't about opposing science. In fact, many STS researchers still regard science as a crucial and irreplaceable component of human civilization. They argue that critiquing science isn't about abandoning it, but rather about confronting the relationship between science and society honestly and considering the future more broadly.

This is why speculative design needs to be combined with STS research. Because the possibilities depicted in speculative design are not just about the possibilities of technology, it is about the possibilities between technology, people, society, and culture. Just as Dunne & Raby stated in Speculative Everything: "Speculation is to unsettle the present rather than predict the future. But to fully exploit this potential, design needs to decouple itself from industry, develop its social imagination more fully, embrace speculative culture..." (Dunne and Raby, 2013, p. 88).

Similarly, while STS challenges the authority of science from the viewpoints of sociology and anthropology, speculative design often questions technological optimism, it highlights the risks and possibilities of technology that are often overlooked. From this perspective, STS and speculative design are highly compatible, as both challenge the linear view of scientific progress and consider the mutual influence of technology and society in research and creation.

STS research, which explores the relationship between technology and society, provides essential tools for speculative designers. Just as designers understand technology and techniques through their experience with materials and prototyping, the analytical and theoretical insights of STS can help them understand the social dimensions of their work. With this perspective, they can move beyond the simplistic view of technology and embrace a more nuanced approach to speculative design and acknowledge the complexities that arise at the intersection of technology and society.

3.3 What is "Better"? The Political and Biased Nature of Design and Technology

Discussing the political nature of objects might seem both absurd and irresponsible. Commonly, technology and objects are seen as neutral, passive, and without intention. For example, when a shooting occurs, we hold the shooter accountable, not the gun; when a nuclear power plant malfunctions, we blame the workers, contractors, or officials, not the plant itself. Culturally and legally, objects are typically not held responsible because we believe that only humans have free will and the capacity for action and choice, and therefore bear responsibility.

Unlike earlier STS research that focused on the social nature of knowledge within the scientific community, STS researchers in the 1980s started to shift their focus towards technology in everyday life. Longdon Winner raised the question by asking: "Do Artifacts Have Politics?", directly addressing the political responsibility that designers must consider in the context of society and technology. However, Winner's argument doesn't aim to place technology and objects on the same level as humans, nor does it suggest that objects, like humans, should be held accountable. What he questions is: "Even if technology has no intention and cannot be held responsible, it still impacts people's choices and shapes society in various ways." In other words, while technology and technological objects may not bear political responsibility, they still have undeniable political influence (Winner, 1980).

So, how do technological objects possess a political nature? Winner pointed out that even if technological objects don't inherently have a political nature, their design and arrangement often act as mediums for political intentions. Winner uses the overpasses in Long Island as an example. At first glance, these overpasses appear ordinary, just slightly lower than usual, allowing cars with a clearance of about three meters to pass underneath. However, this design choice effectively prevented buses over four meters high from passing, thereby limiting the mobility of lower and middle-class poor and black individuals. This ensured that the parkways and waterfront areas where these overpasses are located remained accessible primarily to middle and upper-class white individuals with private cars (Winner, 1980, p.123-128).

This example demonstrates the political nature of technological objects in specific configurations, as if they were tools used for particular political intentions. However, Winner also raises a deeper question in his article: "Do technological objects have an inherent political nature? Even if there is no explicit human intention behind technological objects, can they still exert specific political effects on society?"

To some extent, we can say, choosing a specific technology also means choosing a particular way of life. For instance, operators on a factory production line must adapt to engage in repetitive tasks since the work has been separated into divisions. The machinery and the people together form a larger system. To keep this system running smoothly, both the mechanical parts and the operators need to be supervised, leading to a hierarchical and strict management structure. Similarly, in digital workplaces, emails and messages blur the lines between public and private life, requiring workers to be more adaptable. In other words, the possibility of a technology isn't just about timing and place but also often depends on human collaboration. When we introduce a specific technology into our lives, it necessitates changes, whether in individual lifestyles or the entire social structure. This explains the two-way relationship between technology and society. On one hand, technology can be used to fulfill political intentions, impacting society through its

design. On the other hand, when a new technology is adopted, people and society as a whole must adapt and make adjustments.

It's unfair to say that designers are completely unaware of the political aspects of design. On the contrary, I believe that designers have already trained themselves to be professional "political designers" unconsciously. Their political nature serves as a guide, influencing how people interact with the object and how society perceives it. This guidance is something designers are quite familiar with when they think about how users should interact with a product. The instructions for use are often not explicitly stated but are implicitly embedded in the design.

However, sometimes designers don't think enough about the deeper meanings and political messages in their designs. For example, in the case of poorly designed pedestrian pathways, the needs of disabled individuals might be overlooked, which may effectively exclude them as users. In these situations, designers aren't necessarily acting with evil intent; they may simply be unaware of the exclusions that result from their design choices, resulting in unintentional but still significant harm.

Many people nowadays believe that “technology makes a better world.” In design, we all have our own ideas of what “better” means, and these ideas can influence people's lives in different ways. But what exactly is “better”? Depending on our interpretation of “better,” we might end up building an overpass that reinforces class barriers, or we might create a pedestrian path that promotes inclusivity. Essentially, our designs, shaped by various political intentions, can have a profound impact on society through countless technological objects.

Moreover, technology shapes how society is structured. As we've discussed, choosing a technology is like choosing a way of life. As technology evolves, design plays a crucial role in shaping our perceptions and expectations. For example, through design in advertisements, we're led to believe that social platforms can bring us closer together or that a hybrid electric car can make our lives and the planet more sustainable. These visions are crafted by designers, and they influence our choices and lifestyles in various ways— some accepted, some overturned, some become a pressure to life. In any case, design is always at the heart of how technology impacts society.

Back to the perspective of speculative design, the key to "telling stories with objects" in speculative design is also a type of " embedding messages and visions into the design," so people can understand the intended use and the broader context of the object, even before they physically interact with it. Whether it's real products or conceptual pieces, they all communicate a narrative to the audience. Through the material, shape, cultural symbols, images, videos, or actual interactions, speculative designers embed possibilities into their creations, inviting us to envision alternative ways of living.

4. SPECULATIVE DESIGN IN DREAMATICS INC. – A CASE STUDY

4.1 Description of Dreamatics Inc.

4.1.1 Motivation

As artificial intelligence technology advances rapidly, it has placed designers in a complex position. On one hand, designers see AI as a new tool with potential, leading them to explore applications that maximize its capabilities and values. On the other hand, there exists a concern among designers regarding the potential risks of AI. As people are generally optimistic about technological progress, designers, who are often guided by a "human-centered" approach, are compelled to be cautious and engage in continuous critical thinking during the design process.

Based on the above background, we decided to focus our study on the use of AI in genetic engineering. There are two main reasons for this choice: Firstly, reproduction has always been deeply intertwined with governmental policies. A well-known example of this is China's one-child policy from 1979 to 2015 and its recent three-child policy. (Wang, 2023). Another example is the recent decision by the U.S. Supreme Court in 2022, which overturned the abortion rights established by Roe v. Wade (Housman, 2022). These examples show that reproductive rights are not entirely “free rights.” Therefore, we selected this politically sensitive area of technology as the basis for our scenario building.

Secondly, technology often comes from human nature, and the concept of eugenics has always been linked to human desires. Regardless of Darwin's theory of evolution, the desire for intelligent and healthy offspring seems universal. In practice, humans have always used prenatal testing to make decisions about having children. A cold fact explains this: in Europe, 90% of embryos diagnosed with Down syndrome are chosen for termination (Kloc, 2020).

Our aim was to spark conversations about potential futures in artificial intelligence and emphasize a key point: technology inevitably carries biases when influenced by humans. For instance, when we asked ChatGPT 4.0 to define “good genes,” it provided somewhat controversial answers, mentioning traits such as specific eye colors, mental health, height, and weight. Based on this interaction, we were inspired to create a fictional future biotech company, Dreamatics.

Speculative design isn't just about imagination without evidence, we also need to make sure the technology could realistically exist in the future. This is exemplified in the work undertaken by Hasegawa in the (Im)possible Baby project. During the project, the artist had to continually verify the possibility of same-sex partners having children with their own genes. This involved consultations with biotech experts and collaboration with the genome company 23andME. In our Dreamatics project, we couldn't work directly with experts this time, so we mainly relied on a literature review to check the feasibility of the technology. We discovered that genetic engineering is advancing rapidly, and with successful experiments in artificial wombs, the U.S. FDA is even considering human trials (Willyard, 2023). It's uncertain whether “artificial reproduction” will become mainstream in the future, but one thing is clear: with the advancement of AI technology, the growth of genetic engineering will be exponential. Initially, the focus might be on eliminating hereditary diseases, but once that door is opened, other possibilities may emerge. For example, wealthy people might start thinking about how to pass on their “superior” genes.

After delving into genetic engineering, we came up with a fictional company called Dreamatics Inc. Set in 2026, this company is at the forefront of a new era where artificial intelligence has revolutionized conception and genetic modification. As we get closer to unlocking the secrets of cancer and genetics, we can begin to envision what this future might hold. Our project uses speculative design and design fiction approaches to create an immersive experience, allowing participants to explore the ethical and social impacts of precise genomic modifications made possible by CRISPR-Cas9 technology. The project envisions a world where participants, as selected genetic candidates, consult with "Dreamatics Inc." to optimize their offspring's genetics through strict management of diet and exercise. Through this speculative lens, Dreamatics serves as a platform to spark discussions on the

increasingly relevant topic of genetic enhancement and the role of AI in our rapidly evolving society.

4.1.2 Experiment A: Interactive Design and Political Discourse

The interactive experiences created for Dreamatics Inc., like the official website, genetic testing, and virtual agent interactions, are designed to engage participants in meaningful conversations. These interactive features not only draw users into the speculative world but also encourage them to think deeply and discuss the political and ethical implications of AI-driven genetic selection.

In our project, we included quite a few controversial elements on the website. While the site appears to be a regular webpage at first glance, there are some unusual features that stand out. For instance, on the front page, there's a striking image of a baby in a test tube. And within the text of the webpage, there are many hidden controversial topics.

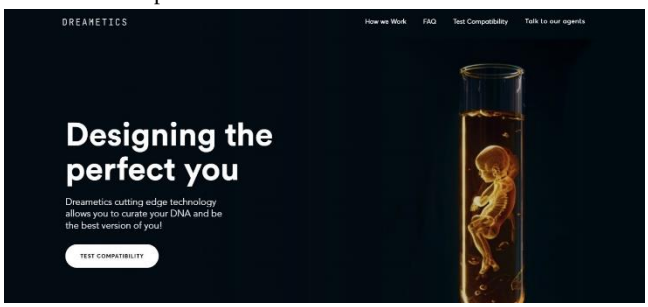

Figure 5. The Official Website of Dreamatics

We also created an interactive test inspired by ChatGPT's responses to the question "What are good genes?" The test poses questions to participants about their talents, eye color, and whether they've experienced depression at least once a week. This is intended to make participants question the test during their experience, especially when they score only 60%. It prompts them to think more critically about the concept of AI-selected genes.

Moreover, this project features a virtual tour that allows participants to interact with virtual agents (AI NPCs.) We intentionally set the time period in the system and imported the necessary genetic knowledge bank into the systems. The reason for this is that AI is very good at persuading people in the current era, which can be quite risky. For example, in Taiwan, there was a plan to use AI to assist judges in writing legal decisions. However, in one case, the AI system fabricated a non-existent case, leading to the urgent termination of this project (CommonWealth Magazine, 2021).

Figure 6. The Virtual Tour of Dreamatics

It's surprisingly easy to manipulate AI outcomes with deliberate human intervention. During the trial of our virtual tour, even our team found ourselves being swayed at one point. As AI systems become more sophisticated in the future, they could lead to unintended consequences, regardless of whether they develop self-awareness. For instance, we could create a virtual and immortal version of Kim Jong Un. Want to know if we should launch missiles? Just ask this digital version of Kim Jong Un for an answer.

Currently, some totalitarian nations are trying to develop their own national AI systems. It's uncertain whether we'll see a scenario like the one in the novel 1984, where "War is peace. Freedom is slavery. Ignorance is strength." Historically, the Soviet Union distorted history through photograph manipulation. With the emergence of generative AI technologies like Sora, brainwashing or manipulating the public in the future may not be a challenging task.

4.1.3 Experiment B: Publication Design

In this project, we created various types of promotional material, including traditional print ads and video campaigns. These ads often use an exaggerated tone and a hard-sell approach to promote a product or an idea.

The history of advertising is not only a history of technological advancements but also a mirror of social culture. For instance, in Taiwan's historical research, there have been studies that examine social and cultural progress through advertising. One example is that advertisements for electrical appliances started appearing in the late Japanese colonial period, indicating that Taiwan's industrialization began in modern times (Chen, 2015).

For the design, we chose a hyperreal style to emphasize the conflict between what's real and what's not. This approach is similar to the fake or parody commercials that gained popularity in the 1970s, which created false ads that mimic real ones to poke fun at consumer culture. The goal is for people to notice something off about everyday familiar items (ADBUSTERS, n.d.).

Figure 7. The Print ad of Dreamatics

Through a series of ads, Dreamatics aims to humorously highlight the political issues surrounding technology. For example, one ad poses the exaggerated question, "Is your child a winner?" In the video, it uses the statement: "Our children will be nurtured to their fullest potential, guided by AI. They will discover their unique talents and dreams, ensuring a brighter future for all…Every citizen will be under the watchful care of an AI guardian." In the job posting, we require the candidates to have "14-22 BMI with 110-170 IQ." This invites participants to step into a humorous but chilling technological future world.

Figure 8. The Video Campaign of Dreamatics

Figure 9. Fake and Parody Commercial Culture

4.2 Political and Interdisciplinary Aspects of Dreamatics

In the context of Dreamatics, the political and interdisciplinary aspects play a crucial role in shaping the speculative design framework. The project explores the ethical and social implications of AI-driven genetic selection, highlighting the inherent political biases within technological advancements and reflecting on how technology can both shape and be shaped by social norms and power structures.

By integrating AI into genetic engineering, the project prompts critical reflection on potential future scenarios where technology not only influences our biological forms but also reflects existing social values. This project serves as a platform for engaging participants in discussions about the political dimensions of technology and the ethical considerations surrounding AI-driven genetic modifications.

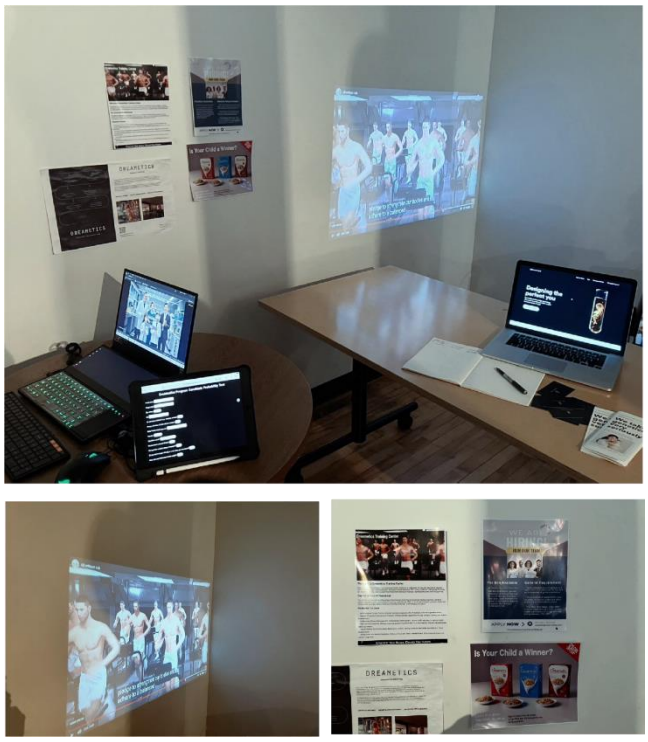

Figure 10. The Exhibition of Dreamatics

In the speculative world of Dreamatics, we see the intertwining of design, technology, and politics. This intersection is crucial for understanding how speculative design can not only envision future possibilities but also critique current practices and power structures. The project shows that design is inherently political, influencing and being influenced by the socio-political context.

A key focus of Dreametics is to question who has the authority to define "good" traits. The integration of AI in this scenario is especially thought-provoking, as it underscores the potential biases inherent in algorithmic decision-making processes. In history, Germany once established standards for "good genes" to justify their acts of ethnic cleansing. In the future, technology will not only be used to enhance human welfare, but it will inevitably also serve as an effective tool for criminals and authorities. Furthermore, we can anticipate that many social issues will no longer be solvable through a single perspective alone.

This is why this paper emphasizes the interdisciplinary nature of speculative design. A comprehensive understanding of the implications of new technologies requires input from multiple disciplines. This interdisciplinary approach is crucial for addressing the complex ethical dilemmas of artificial intelligence. By engaging with the political dimensions of design, speculative projects like Dreamatics can offer valuable insights into the potential futures shaped by emerging technologies.

4.3 Opportunities and Challenges

We've delved into a highly controversial realm by choosing to focus on the issues of AI-driven genetic engineering. While discussions around AI in art or music are more common, we've taken a more extreme place with Dreametics. In an era filled with technological optimism, our creation might seem like an alarmist. However, Dreametics allows us to engage in critical thinking and explore the intersection of speculative design and STS research. We hope this case study prompts people to reflect on the inherently political nature of design, especially as AI continues to advance.

Figure 11. A Deepfake Clip from the Video Campaign

The media nowadays is often filled with a fascination for technology, but designers tend to forget the fact that technology is not neutral. The development of AI technology is faster than imagined, and the pace of discussion is clearly not keeping up with technological progress. While many lawsuits are ongoing, their proceedings are time-consuming and can't keep up with the changes of the times.

In exploring the wonders of AI tools, we hope designers will also engage in diverse discourse, ensuring that the work produced by AI or the thoughts it provokes are more diverse, rather than just a single voice. As we astonished by AI-generated art, we must not overlook that AI-generated child pornography has already begun to emerge (Duboust, 2024).

Every piece of technology carries inherent political implications, a fact evident when we look back at the history of the Industrial Revolution. Whether AI will promote greater equality or lead to technological disparities remains unknown. However, based on what we know about the past, it might suggest that we shouldn't be too optimistic.

5. CONCLUSION

In the book "The Concept of the Political," Carl Schmitt stated: "The concept of humanity is an especially useful ideological instrument of imperialist expansion, and in its ethical-humanitarian form, it is a specific vehicle of economic imperialism. Here one is reminded of a somewhat modified expression of Proudhon's: whoever invokes humanity wants to cheat. (Schmitt, 1976)"

The term humanity, as Carl Schmitt said, can be instrumentalized, used to accuse the enemy of not being "human." This is also something that could happen when AI-powered eugenics is pushed to the extreme. The future of human race is a product of synchronicity. The future of humanity is not determined by a single factor or trend, but rather is the result of multiple factors and events that interact and influence each other over time. This includes a variety of factors such as technology, environment, politics, and economics. These factors do not operate independently but interact within an interconnected system. The advancement of AI has complicated social issues. It enabled faster technological progress while also potentially making the problems more complicated. In the future, it will be crucial to engage in more interdisciplinary discussions on a range of issues.

While designers do not need to constantly consider the political nature of their work, recognizing that technological creations carry political characteristics is crucial. Dreametics Inc. demonstrates that technology and design are not neutral, it is inherently political, charged with the power to influence and reflect the social and ethical contexts it exists within. This paper emphasizes the crucial need to spark political awareness and interdisciplinary thinking in the design process, it also highlights the intersection of design, technology, and politics, revealing the political and ethical dimensions that are inherent in speculative design. Therefore, speculative design needs to engage with these political dynamics, questioning the current state of affairs and imagining alternative futures that are more equitable and inclusive.

The importance of cross-disciplinary research also cannot be overstated in this paper. As demonstrated by Dreamatics, addressing the ethical and social issues posed by emerging technologies demands a comprehensive approach that integrates insights from sociology, ethics, and technology. Such an interdisciplinary lens is crucial for facing the complex ethical challenges in the future.

Finally, this paper encourages a shift in thinking from human-centered to non-human-centered perspectives. In the rapidly advancing field of AI, designers must expand their focus to consider the broader implications of their work, including the impact on non-human entities and the environment. This broader perspective is crucial for fostering a more inclusive approach to design. As we continue to navigate the uncharted territories of technological advancement, the insights gained from speculative design and STS research will be invaluable in shaping a more thoughtful and inclusive future.

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