

INNOVATION IS THE NEW BLACK BOX: A CRITICAL REVIEW
OF HUMAN-CENTERED DESIGN

by

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DEDICATION

For Gram.

ACKNOWLEDGEMENTS

To my committee members, my family, and friends who have all heard me talk at length about various parts of this thesis: thanks for being a sounding board when I needed it most and making space for me to wander and explore.

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LIST OF ABBREVIATIONS

Abbreviation	Description
HCD	Human-centered Design
CDC	Center for Disease Control
WUSP	Water and Sanitation for the Urban Poor
WHO	World Health Organization
UNICEF	United Nations Children’s Fund
JMP	Joint Monitoring Programme
IOT	Internet of Things
VR	Virtual Reality
AR	Augmented Reality
DPD	Detroit Police Department
PGL	Project Green Light
MDI	McKinsey Design Index
NPR	National Public Radio
AI	Artificial Intelligence
STS	Science and Technology Studies
NIH	The National Institutes of Health
B2C	Business to Consumer
UDIF	Universal Data Exchange Format
TAM	Total Addressable Market

DOJ

Department of Justice

ABSTRACT

Human-centered design (HCD) is believed to be the pinnacle of design thinking and now is so well accepted amongst professional designers that it often escapes criticism. By using empathy as the first and often most important step in design thinking, human-centered design is often linked to social progress and yet solutions created by designers often fail to holistically address socio-political power structures and instead focus on technological innovation as complete solutions. In this exploration, I offer a cohesive theoretical framework called the Technological Forecasting Framework that explains how the introduction of design thinking as a strategy in pursuit of innovation only refashions racism and streamlines the creation of products and technologies to be commodified by the larger white supremacist capitalist patriarchy. In this framework, designers act as maintainers of white supremacy as hired toolmakers paid for by the elite. The products they design are formed in a theoretical black box that treats Black people as an infinite source of data to be used to build new products and services. The goal of this investigation is to help professional designers question their coveted methodologies and understand the responsibility of the designer in this larger system. This exploration will be conducted through literature review and analysis of various design case studies and cultural texts.

I. INTRODUCING TERMINOLOGY

Human-centered design (HCD) as a design thinking methodology uses a human-first approach to create innovative solutions for some of the world's most complex problems, often referred to as "wicked problems." It does not, however, outline who it considers to be human. This study explores how designers consume Black people and "Blackness" to create products. These products are further innovated to create technologies that have implications in both the present and the future. In this exploration, I will show the designers have always existed, even if known by other names, and that the advent of design thinking only helps to accelerate this consumption. It is not only dangerous for the field of design to accept frameworks as inherent wisdom, but also could have extreme implications for designers' audiences.

Glossary of Key Terms

Black box: "is a metaphor commonly used in STS to describe how the social production of science and technology is hidden from view" (Benjamin, 2019, p. 34).

Blackness: "Black cultural identity [that] involves [and relies] on persons and other symbolic and material representations socially and historically constructed as 'Black' (e.g., speech and phonetic conventions, folklore, style, fashion, music, use of the body and Black physical form)" (Crockett, 2008).

Big Data: a term that describes a large volume of data (SAS).

Commodification: the process of turning atypical entities into marketable goods and services that can be sold on the consumer market. “In capitalist political economies, land, products, services, and ideas are assigned value and are bought and sold in marketplaces as commodities” (Hills-Collins, 1990, p. 298).

The “buying and selling of goods and services in markets” (Ertman & Williams, 2006, p. 895).

Data: is information. “Data are different from observations. They consist of clearly defined pieces of information that are drawn from observations, but interpreted in different ways. Thus data are always a subjective creation of the analyst” (Jacoby, 1991).

Define: Second step of design thinking. During the definition phase of a project designers continue to collect information they gathered. From here, they are beginning to understand pain points and identify patterns across all the collected materials. It is here that the designer begins to analyze the data from the user in order to make a more concrete statement about what potential problems need solutioning. This results in a problem statement which usually exists as a short blurb that clearly outlines the issue and acts as a north star for the entirety of the project (Dam & Siang, 2021).

Designer: “anyone who has agency to make a decision, however small, that will impact a group of people or the environment” (Creative Reaction Lab, 2018, p. 4).

Design Thinking (DT): is “a way to solve problems through creativity” according to the global design studio IDEO (*Design Thinking Defined*, n.d.).

Empathize: First step of design thinking. Used to help the designer to gain an understanding of the problem they are seeking to solve. This process involves observing behavior, asking user-collaborators questions for clarity, and using secondary resources to try to make connections (Dam & Siang, 2021).

Human-centered design (HCD): a design thinking methodology that uses a person-first approach to create innovative solutions tailored to meet the needs of the user (IDEO, 2009).

Ideate: Third step of design thinking. Ideation builds on top of the empathy and definition outlined in the first two steps. The ideation phase is where the designer can begin to form thoughts about what the potential product or solution might be. In this experimental phase, the designer is meant to brainstorm and experiment with as many ideas as possible (Dam & Siang, 2021).

Innovation: In their 2016 essay, Andre Russell and Lee Vinsel describe innovation as “the diffusion of new things and practices” (Russell & Vinsel, 2016).

Machine-type technologies: outputs of products that ground ideas or perceived feelings (mechanism-type technologies) in reality and make them true and believable.

Mechanism-type technologies: are best described as ideas or ideologies. They exist as invisible tools that society abides by even though they are never seen or heard. These technologies are not limited to tangible devices but can also exist as symbolic tools that structure society (Benjamin, 2019, p. 36).

The New Jim Code: “the employment of new technologies that reflect and reproduce existing inequities but that are promoted and perceived as more objective or progressive than the discriminatory systems of a previous era” (Benjamin, 2019, p. 5).

Product: anything that can be offered to a market to satisfy a need, want or demand (Kotler et al., 2005, p. 36).

Prototype: The fourth step in design thinking. Prototyping involves building low fidelity versions of the final product as a means to figure out if the solution has the potential to solve the issue at hand (Dam & Siang, 2021).

Speculative Design: is the process of addressing big societal issues with design processes or frameworks to trigger debate and critical reflection.

Technology: are tools used to make a means to an end.

Test: The fifth step of design thinking. In this step, designers are testing their prototypes with users to see how well their imagined solution works in the real world based on the problem they defined at the beginning of the project (Dam & Siang, 2021).

Translucent Black Box: describes the perceived feeling from users that *something* is being designed with the introduction of design thinking. Even with this feeling, however, users' access to the production of this new product is still impeded

Users or End User: describe the group who ultimately uses or is intended to use a product. Users, sometimes called end-users could be individual people but also institutions like companies and governments (Russell & Vinsel, 2016).

White supremacist capitalist patriarchy: an institutional structure of “interlocking systems of domination” that function simultaneously (hooks, 2006). In this exploration the word *system* is used to describe these intertwined structures within the Black Box of Innovation Framework.

Wicked Problems: are cultural or societal issues that are nearly impossible to solve. Systemic in their nature, wicked problems have ten characteristics that help society determine whether or not a problem is just a traditional issue or inherently “wicked” (Rittel & Webber, 1973, p.161-167).

II. UNDERSTANDING HUMAN-CENTERED DESIGN

Design, in itself, is too varied and vast to be expressed or defined in one way (Williams, 2019, p. 3). In this exploration, I'll refer to design as both a professional practice and a method for innovation from the viewpoint of standard Western implementations. “*Design Thinking* is a way to solve problems through creativity” according to the global design studio IDEO (*Design Thinking Defined*, n.d.). In recent years, design thinking has gained the attention of big businesses, non-profits, and everyone in between all in the hopes of using its methodologies to solve big problems in a creative way. *Human-centered design (HCD)* is a type of design thinking that uses deep research processes in order to make creative solutions to solve a problem for people. Human-centered design is meant to address the needs of the final user and not solely the client that hired the designer (Miller, 2018, p. 42). Often referred to as “universal design,” human-centered design focuses on creating design systems that endeavor to aid everyone – regardless of race, class, or country (Visocky O' Grady & Visocky O' Grady, 2017, p. 14).

According to the Equity-Centered Community Field Guide by Creative Reaction Lab, the definition of a *designer* is “anyone who has agency to make a decision, however small, that will impact a group of people or the environment.” (Creative Reaction Lab, 2018, p. 4). Commercial or professional designers such as Digital Product Designers, Industrial Designers, and Visual Designers create products for targeted users with the help of design thinking frameworks. A *product* is anything that can be offered to a market to satisfy a need, want, or demand (Kotler et al., 2005, p. 36). For a commercial designer, a product might manifest as a physical artifact, digital mockup, or even just an outlined plan. *Users*,

sometimes called end-users, describes the group intended to utilize the product and could be individual people but also institutions like companies and governments (Russell & Vinsel, 2016). These users usually receive access to a product through the process of *commodification*, or the “buying and selling of goods and services in markets” (Ertman & Williams, 2006, p. 895).

Design Thinking has many different proprietary models – some three steps, others five – but in most cases it follows the larger five step framework: Empathize, Define, Ideate, Prototype, and Test. These steps require that the designer move between various methodologies to research, collect information, brainstorm ideas, create potential solutions, and then try them out in the environment they are meant to solve for.

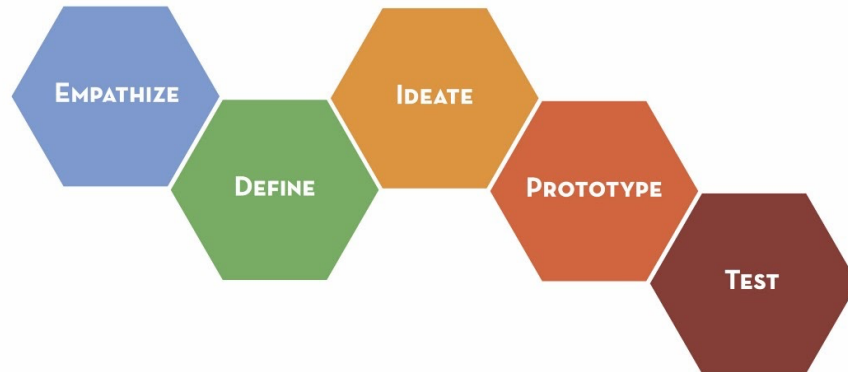


Figure 1. Design Thinking Framework. IDEO. 2016. Digital Image.
A diagram that shows the five general steps of design thinking.

Negative Implications of Design Thinking

Many of the techniques that were once used in the Participatory Design framework have become the standard practice for the design and development of products and services on the market today with the help of design thinking. This includes collaborative workshops

like that of the classrooms during the Bauhaus era and iterative prototypes that are tested by users as designs are being developed amongst many other tactics. Designers that use these participatory methods champion their users by allowing them to be a part of the design development process instead of sidelined stakeholders or mere spectators. Today, HCD typically includes the end-user in the design processes as a collaborator and subject matter expert to give them the opportunity to work with the professional designer from the very beginning.

Human-centered design – or designing for people and society – has become the dominant design thinking methodology in the practice. In the 21st century, HCD is the primary framework being taught in schools and design departments, even if it is not referred to as such (Meyer & Norman, 2020, p. 14). This kind of design thinking is so ingrained into the practice that it is not often criticized or questioned (Norman, 2005, p. 14). For any practice in any field, it can be dangerous to assume that any one framework or methodology should be followed blindly. While HCD can be useful to inspire designers and help them work with users as collaborators, it offers little guidance around accountability, ethical values, or a clear understanding on distribution of the final product (Chock-Costanza, 2020, p. 100).

Imbalance of Power

Design thinking, or branded methodologies, are often viewed as elevated schools of thought whereas “normal” thinking is discounted and deemed uncultivated (Benjamin, 2019, p. 178). In more recent additions to design thinking methodologies, designers try to

lower their social status by dubbing themselves as “Facilitators.” No longer are they the Commander-in-Chief but simply a humble servant pushing discoveries and processes along in the hopes of finding a solution. The position of the Facilitator is often masked as that of collaborator, yet it affords designers a level of control that is not often granted to the people they are “collaborating with.” Professional designers occupy a relatively high rung in the hierarchies of “knowledge economy” projects even if they are unaware of it (Irani & Silberman, 2016, p. 1). While the human-centered methodologies mandate that designers should co-produce with their intended audience, designers and the clients that they serve are typically the parties approving the final product.

Lack of Contextual Awareness

In design education, young designers are taught to believe the practice is about solving problems. To be the best designer, the goal is to be a creative problem solver armed with proven techniques that can be used to design innovative solutions. Human-centered design positions the designer as both Facilitator and Maker – one who collects useful and relevant information, synthesizes data, and creates a helpful result. It is often believed that with the right methods, collaboration, and technical know-how a designer can solve even the most difficult problems we face in humanity. So what does this mean for humanity’s biggest and most complex problems?

Wicked problems are cultural or societal issues that are nearly impossible to solve. Systemic in their nature, wicked problems have ten characteristics that help society determine whether or not a problem is just a traditional issue or inherently “wicked”

(Rittel & Webber, 1973, p. 161-167). These wicked problems can affect everyone and everything, no matter their circumstance. Some examples of this type of problem might include overpopulation, pollution, and climate change. In professional design today, designers are solving some of the world's most complex wicked problems, but the current education system does not always prepare students for these dynamic issues (Meyer & Norman, 2020, p. 13). This leaves the new professional designer with a sense of inherent optimism that makes them believe that they can solve any problem as long as it can be broken down into understandable pieces, quantified to understand scope, and solved with the help of information collected from those most affected by the issue at hand (Dunne & Raby, 2013, p. 2). Because of this optimism, the same frameworks that are used to solve these wicked problems such as poverty and homelessness are used to help bolster success for small nonprofits struggling with problems like community outreach programs and corporations working to build products to capture users' attention and increase clicks. The methodologies are viewed as interchangeable no matter the scale of the problem they are meant to solve.

Human-Centered Design is Harmful

In recent years, design thinking has gained the attention of big businesses, non-profits, and everyone in between to use its methodologies to solve big problems in a creative way. The idea of design thinking includes ideas and practices from various fields but masks itself as a state-of-the-art schema because of its purported efficiency. The combination of influence and optimism with a framework that is rarely questioned can lead to dangerous consequences. Is this umbrella philosophy – used to solve problems for just about anything – really beneficial to the people it claims to serve? If not, who is

benefiting from it? By focusing on individuals or groups, a human-centered approach may improve circumstances for some while making it worse for others (Norman, 2005, p. 2).

With the following case studies, I will discuss how professional designers use design thinking in practice and present some of the ways in which design thinking and human-centered projects are harmful.

Empathize - Empathy Grounded in Reality

As the first step in the framework, empathizing is meant to help the designer to gain an understanding of the problem they are seeking to solve. This process involves observing behavior, asking user-collaborators questions for clarity, and using secondary resources to try to make connections (Dam & Siang, 2021). By doing this, designers aim to get a deep understanding of all the various elements involved in the problem. This type of empathy is also used to help designers garner inspiration through insights that come directly from the users. Here empathy is an interpretive practice that focuses on the experiences and emotions of the user as fuel for their creativity (Mattelmäki et al., 2014, p. 67).

Empathy – both in the context of the designer and the human-centered design practice – can be both well intentioned and harmful (Benjamin, 2019, p. 170). This can lead to complicated consequences such as denial of the severity of a problem or completely overestimating the true value (or lack thereof) of the product being positioned as a solution.

Case Study: Open Source Financial Chatbot

In 2017 IDEO, a firm that is viewed as the pinnacle of design as a practice, postulated that financial coaches can play a pivotal role in helping people along the journey to financial success. In their 2017 case study, they note that 47% of Americans do not have \$400 saved in the event of an emergency and most are not seeking financial coaching (IDEO, n.d.). Working in partnership with JPMorgan Chase and eighteen other nonprofits, designers used human-centered design methods with the aim of creating a better way for financial coaches to support low-income clients in between financial coaching sessions. The design team started by conducting interviews with Americans from various socioeconomic backgrounds and financial coaches. They also immersed themselves in the experience by observing coaching sessions between clients and coaches. In the end, they put together a documentary-style video that profiles the stories of three Americans who share details about their lives and their financial habits to share with stakeholders on the project.

After learning that a lot of Americans were using unreliable sources like Google for financial advice, early concepts of potential solutions included a set of open-source interactive guides that help people understand how to improve their financial tasks with basic instructions on how to do activities like pay bills and increase their credit score. Through the testing process however, they learned that even though these guides were widely available and could reach a lot of people because it was hosted online, getting their target users to positive financial outcomes wasn't as easy as they thought. With the understanding that financial coaches are proven to be a solution that works, the design

team set out to create an accessible chatbot that doesn't require the resources and scheduling that come along with in-person coaching sessions. The chatbot not only helps coaches stay in touch with their clients but also helps the clients feel comfortable about the financial decisions they may make in between in-person sessions. In the end, the chatbot was piloted with seven nonprofits and it was made available as an open-source tool for any nonprofit to utilize in their communities.

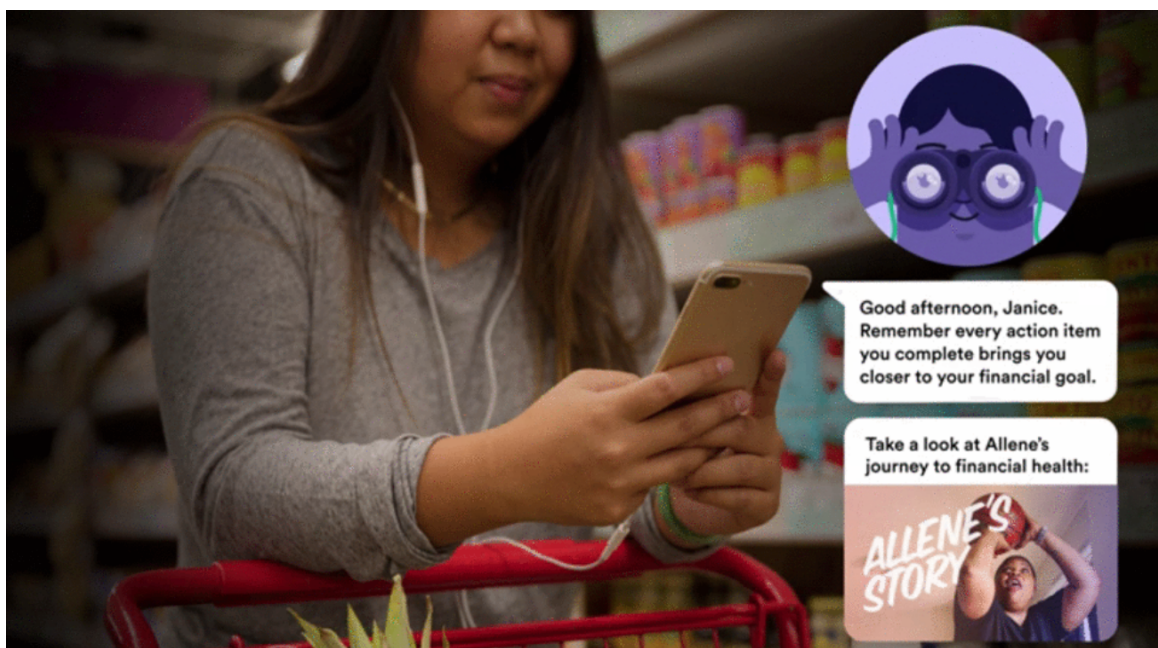


Figure 2. Financial coaching chatbot. IDEO. n.d. Screenshot.
Collateral from IDEO's case study for their financial coaching chatbot for low-income Americans

Empathy is not usually harmful but empathy without context can be. By all accounts, the designers in this case study created a solution they believed would be both accessible and helpful in low-income communities for their intended users. According to the case study on IDEO's website, "52% of users sent between 1-to-3 messages to the chatbot and 49% of participants ticked at least one action item as complete" (IDEO, n.d.). It is clear from the recorded research and documentation that the designers and nonprofit organizations involved in the project had a great deal of empathy for the participants in the study.

Empathy, however, doesn't absolve them from the harm created by shifting the responsibility of financial prosperity onto low-income families when the true culprit is larger systems and institutions that create the poverty they are forced to live in. In a brilliant show of "pulling users up by their bootstraps," the product manages to offer a superficial solution while placing the burden of financial success solely on the user rather than looking to the larger systems. This financial chatbot belittles problems surrounding financial prosperity for low-income American families as a simple phenomenon that they can be coached and guided out of. It ignores and even absolves system-based problems such as stagnant federal minimum wage, the gender wage gap, and increasing student loan debt that plague Americans. From this case study we can see that empathy without a deep understanding of history or opposing structures that contribute to society can be ultimately extremely harmful (Williams, 2019, p. 13).

Define – Under-scoping

During the definition phase of a project designers continue to collect information they gathered. From here, they are beginning to understand pain points and identify patterns across all the collected materials. It is here that the designer begins to analyze the data from the user in order to make a more concrete statement about what potential problems need solutioning. This results in a problem statement which usually exists as a short blurb that clearly outlines the issue and acts as a north star for the entirety of the project (Dam & Siang, 2021). At this early phase, a designer may even push to think about many potential solutions as a means to think about the problem from different angles.

Case Study: Clean Team

In partnership with Unilever and an organization called Water and Sanitation for the Urban Poor (WSUP), designers from IDEO worked to help Ghana's struggling population with their sanitation issues by developing a service called Clean Team. Clean Team is a subscription-based sanitation system that delivers and maintains portable rental toilets to people in Kumasi, Ghana. Patrons don't pay for the toilets themselves but instead pay to have access to use them and have them cleaned by employees from Clean Team. Instead of paying the government a fee to use unsanitary public toilets, they pay a weekly fee for the service to WSUP. In addition to designing the standalone toilet and waste removal system, designers also built a branding system, a payment model, a business plan, and messaging for the company (IDEO, n.d.). In the process of building the product, designers created multiple prototypes over the course of seven weeks. They worked with their organizational partners and Ghanaian citizens to understand the perception of public toilets, aesthetics, comfort, and logistics.

With the creation of Clean Team, roughly 5,000 Ghanaians now have access to these portable toilets and the waste removal services that keep them clean and the patrons healthy. In the human-centered design process, incremental improvement in the form of optimization is viewed as progress – a step in the right direction. Optimization, however, does not always mean the problem is totally solved. With the help of participants in the community, designers were able to marginally improve upon the sanitation system that the government provided for Ghanaians by increasing hygiene practices and packaging it with service. In truth, designers solved some small portion of the problem but not the

core issue itself – millions of Ghanaians don't have access to proper sanitation.

According to an ongoing report called the Joint Monitoring Program (JMP) by the World Health Organization (WHO) and UNICEF, only 14% of Ghanaians in urban settings had access to basic sanitation services in 2017 (*Water Supply, Sanitation and Hygiene (WASH) - Households*, n.d.). This number increases to 72% when citizens consider shared or public toilets provided by the government. The problem here is not only access but also scale.

Rapid economic growth and urbanization in Ghana has put a strain on public infrastructure. For this reason, sanitization services have not been prioritized in the country for many years, making sanitation a huge problem for its population. In Ghana, deaths from the transmission of pathogens through feces is responsible for about 16% to 25% of the deaths among children. In addition to the unnecessary deaths poor sanitation leads to economic loss equivalent to 1.6% of the gross domestic product and Ghana equivalent to about \$290M USD (Appiah-Effah et al., 2019, p. 398). Under British rule, public toilets were constructed across Ghanaian cities in the 1930's and by 2012, approximately three hundred and forty public toilets were registered in the Accra Metropolitan area alone (Appiah-Effah et al., 2019, p. 403). The housing system in Ghana also contributed to many of the sanitation issues. According to a census in 2010, around 51.5% of households in Ghana live in rooms in multi-tenant compound houses (Appiah-Effah et al., 2019, p. 403). These shared households typically have shared lavatory facilities and provide limited sanitation services to those that live in them.



Figure 3. Clean Team group photo. n.d. Digital Image.

A group photo from the Clean Team case study in IDEO's case study about the project.

For Clean Team, design acknowledges some degree of the true problem and offers solutions that solve a fraction of it. To think that the world's problems might be solved with the introduction of a new design would be thoughtless, however. Is it enough for design to act as a mechanism of social welfare when it doesn't always solve problems holistically? Danny Alexander, an IDEO designer on the project, recognizes the challenge is systemic but doesn't identify the full nature of the issue with the following quote, "Because sanitation is a systems-level challenge we knew that we couldn't just design Clean Team's toilet," (IDEO, n.d.). For Alexander, recognizing that the problem Ghanaians faced was systemic meant doubling down on design as a solution and creating waste removal services, branding and more. By creating designs that promote social good without completely challenging larger systems, are designers doing enough? Do designers even have a stake in that game?

Ideate – Collaboration Won’t Save You

The next step in the human-centered design process is to ideate. Ideation builds on top of the empathy and definition outlined in the first two steps. The ideation phase is where the designer can begin to form thoughts about what the potential product or solution might be. In this experimental phase, the designer is meant to brainstorm and experiment with as many ideas as possible (Dam & Siang, 2021). Methodologies such as brainstorming are used to think outside the box and push for potential solutions that might optimize the experience based on the defined problem.

Case Study: Black Mamas ATX

In 2019, AIGA Austin worked in partnership with a nonprofit called Black Mamas ATX to ask the question “how might we ensure all mothers have access to quality, equitable support and healthcare before, during and after childbirth?” Over the course of three months, they used design thinking methodologies to determine a solution to this incredibly complex problem. The aim of this project was to dig into how design might be used to ensure Black mothers have access to the care they need as they begin to plan for their families. Black women in the United States are 3.5 times more likely to die from pregnancy-related causes (Villarosa, 2018). Put another way, Black women are 243 percent more likely to die from pregnancy or childbirth (Martin, 2019). The Center for Disease Control (CDC) estimates roughly 700-900 new and expectant mothers die in the U.S. each year even though most of these deaths are preventable (CDC, 2019).

“Weathering” is a concept coined by Researcher and Professor Arline Geronimus that describes how social hardship deteriorates health. In the early 1990’s, scientists

pinpointed a physiological mechanism that finally explained a weathering phenomenon called allostatic load (Roeder, 2019). Allostatic load describes a process where hormones run through the body causing a fight-or-flight response when the human body is stressed. This process pulls energy from other systems in the body that aren't necessary for a flight-or-fight scenario; this includes the systems that support healthy pregnancies.

In social impact design projects especially, design thinking processes run the risk of ignoring the racialized foundations of problems and displacing the burden of solving said problems onto racialized people that designers claim they are solving for (Williams, 2019, p. 11). In the case of this project with AIGA Austin and Black Mamas ATX, they acknowledge the fact that Black mothers' mortality rates are astronomical in comparison to white women and the work that Black Mamas ATX is doing as a nonprofit organization. However, they do not acknowledge the issue in its entirety. The question is not simply "how might we ensure all mothers have access to quality, equitable support and healthcare before, during and after childbirth?" but rather, "how might we stop Black women from living lives that are so stressful that they have complicated pregnancies that often cause them to die?" Framed in this way, what role does design have in solving that problem other than potentially making it more complicated by pointing to a different issue in the process.



Figure 4. Design thinking workshop. 2019. Digital Image.
A representative from Black Mama ATX places sticky notes on an empathy map.

While it may seem like design can solve these problems with participation from the community and a little rational thinking, it wildly under-scopes the issue at play. The initial question itself assumes that Black mothers do not have access to quality healthcare, when in fact, it is well known that Black mothers that are college educated are even more likely to suffer severe complications during pregnancy and childbirth in comparison to white women that never graduated high school (Petersen, MD et al., 2019, 763). The

problem is not access to care; the problem is that these women are affected by conditions that plague Black people.

Prototype – Design by the Elite

Prototyping involves building low fidelity versions of the final product as a means to figure out if the solution has the potential to solve the issue at hand (Dam & Siang, 2021). There can be multiple prototypes during this stage and it is likely to go through multiple iterations in order to make adjustments based on findings. During this time, rapid iteration of potential products is key as it allows designers to test their products and hypotheses in real time. The hope is that by moving quickly, the designer will be able to identify what is not working as a solution and pivot to new ideas.

Case Study: Architecting Blackness

In *Blanqueamiento and the Celebration of Blackness as an Exception in Puerto Rico*, author Isar Godreau investigates what happens when celebrations of Blackness in Puerto Rico are controlled by the state apparatus instead of the people during a state-funded housing project. The main goal of this project was to create new housing for residents of San Antón who had been subjected to years of dilapidated shelter. Because this area of San Antón was historically known for its Black population, another key goal was to mark this area as a site of Afro-Puerto Rican traditions and culture by preserving historical features and architecture. The creative strategies the planners and architects used during the project were built in part from their limited personal understanding of San Antón and their passion for preserving what they perceived to be the resident's community practices – patios. Patios in San Antón are communal yards that are co-owned between families

and used as spaces to facilitate gatherings and celebrations for family members and close friends. For the architects on this project, the patios were the organizing principle used to determine how the space would be divided among the houses and the various families that lived in them.

One of the first issues that came to fruition in this project surrounded the concept of ownership. Houses in these new developments were distributed as single-plots that were meant to be owned by an individual family member. This plan, organized and developed by the architects, completely upended the system of co-ownership that had been in place for generations. In addition, there were also many issues involving zoning, materials, and road access to which architects figured out creative solutions to rectify. In the end, residents were outraged with the outcome of the project and felt as though their way of life had been completely uprooted. Their needs were not prioritized but rather the needs of the state and the perception of the architects were prioritized. Because this project was controlled and funded by the state, the mayor used the project as a means for political validation to show his pride in Puerto Rico, and more specifically, Afro-Puerto Rican history. The planners of this project dictated what “Blackness” meant for residents of the neighborhoods instead of listening to their pain points.

One of the key mistakes made during the process of redesigning the living spaces is their lack of understanding of the community they were designing for in the first place. The reason for this mistake was not simple oversight, but purposeful construction of how the state wanted Black people in Puerto Rico and Blackness to be understood – an assumption that designers attempted to memorialize with the construction of these homes. Blackness, in the minds of the designers and the government that paid them, was seen as

something that exists on the margins and somehow only in the past. In the case of this project, architects managed to displace Blackness in an attempt to modernize the state. In this example, we see how in the human-centered design framework, solutions are created by the elite, or the people in power, with designers as the proxy interacting with the intended users to fulfill the perceived need based on the assumptions of the nation-state rather than input from the actual end users, or tenants in this case. Was the true goal of the project to house people or simply to build a monument to the state that preserved the status quo?

When one attempts to design for all humans it is critical to understand *which* humans are being prioritized (Benjamin, 2019, p. 174). It is here we ask the question, “who is considered human in human-centered design?” Even as designers collect information from their users, ultimately designers use their own perceived understanding of problems to determine solutions (Norman, 2005, p.14). In the game of perception, who is prioritized as the most important voice? In commercial settings when designers are being paid for their expertise and work, the opinion of whoever is paying them is usually the voice that is being prioritized, not necessarily the group that will use the final product. This sort of relationship is vividly apparent when new projects are spearheaded by large entities such as corporations or governments.

Test – Illusion of a Solution

In the final stage, designers are testing their prototypes with users to see how well their imagined solution works in the real world based on the problem they defined at the beginning of the project (Dam & Siang, 2021). After testing, there are often more

opportunities for iteration to continue to make the product better.

Case Study: BlockPower

BlockPower, a nonprofit that was founded to increase the Black voter turnout rate for the 2020 presidential election cycle in America, is a perfect case study that exemplifies how design prototypes work. To reach their markets, the organization created a website to make reaching out to Black people to remind them to vote both easier and more accessible. By partnering with Black run organizations, the platform helps to recruit, train, and pay Black organizers as Ambassadors to find and motivate Black non-voters called Triplers – those that haven't voted but promise to vote and tell three people to also vote – to get out and vote. In the end, BlockPower was able to recruit more than 10,000 Voting Ambassadors who in turn recruited 35,000 Vote Triplers (*We are BlockPower*, n.d.). To create this concept, the organization enlisted the use of designers to use human-centered methods to understand Black people's perception of the voting process and potentially try to recruit more people in their inner circles to also vote. These designers conducted studies around everything from language and branding to understanding the likelihood of using the product. While it is innovative to attempt to enlist Black people to vote by using community members and friends and family to recruit them, BlockPower neglects to diagnose the problem holistically and is a distraction from the larger issues at play. Black people face insurmountable barriers to voting. Just as BlockPower is not the first attempt to try to get Black people to vote, the barriers they face when voting have also evolved. Blockades such as poll taxes and literacy tests from the 1900's are today's unfounded felony charges and voter ID requirements. The organization's ability to recruit

more than 10,000 people does not negate the fact that these impediments once existed, and barriers continue to exist in new, insidious forms today.

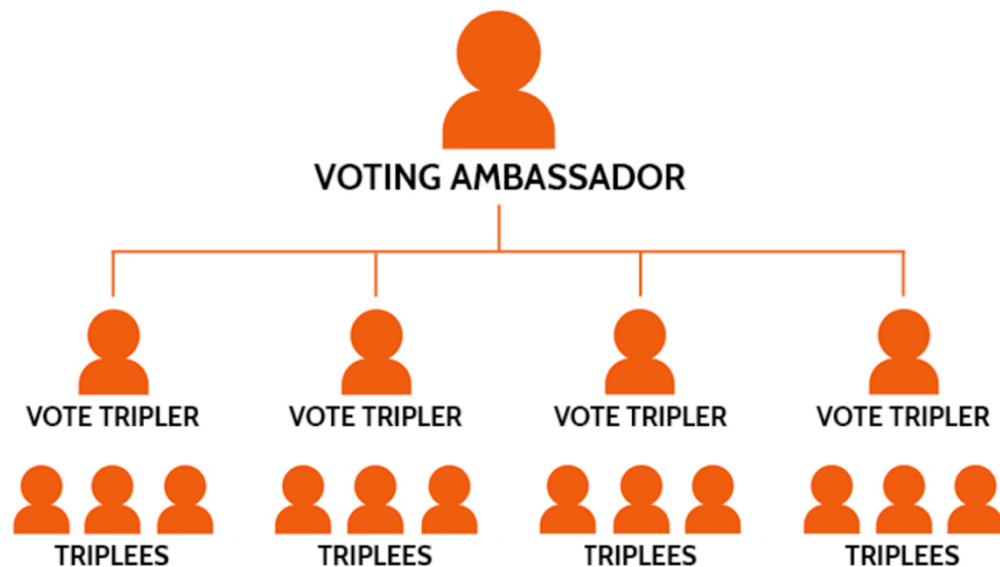


Figure 5. BlockPower. n.d. Screenshot.
Diagram of how BlockPower's vote tripling system works.

While BlockPower shifts the paradigm for how and from whom Black people might get their information about voting, it does nothing to attack the problem at the root and reproduces the same harm that might be seen from a typical campaign aimed at Black constituents. BlockPower is not a final solution to Black voting but rather just the most recent iterative prototype that assumes that Black people are not doing everything in their power to get to the polls despite voter suppression.

Conclusion

Design thinking is not simply a fad, but a framework that has borrowed and appropriated practices that already existed and neatly stitched and packaged itself up to be a driver of

innovation. It is not a new framework or even a new way of thinking, it has just been branded and marketed as such. Combined with social influence of designers and inherent optimism in the power of design and design thinking, those regarded as professional designers and the clients that pay them can significantly change the way we all experience the world.

As we have seen in the featured case studies, human-centered design as a framework can reveal some great insights about the communities and people that designers create for but it can also be incredibly fallible. Empathy without context can be harmful even when designers have the best intentions and present solutions that seem to solve the issue. This can lead to shallowly defined problems that are wildly under-scoped, leaving the communities the product was intended for to bear the burden of truly solving the issue. In many cases, the solutions that designers arrive at only optimize current systems when they promised to completely rethink them. HCD has also built innovation into its framework as a means to distract from the fact that more often than not problems need holistic change to truly be solved. This, in turn, makes the defined problem a moving target that continuously upgrades and updates itself. Finally, when the definition of a problem is left to the elite, many of their assumptions work their way into the final solution, leaving the intended users with a product that may not speak to their actual needs.

Designers that blindly follow the human-centered design frameworks are not solving problems as comprehensively as they think they are. In each of these studies,

technological fixes were used to alleviate a pain point or problem for those racialized as Black across the diaspora. Design thinking in these case studies focused on human needs as a means to create social progress with the help of innovation. By prefacing the framework with empathy, HCD projects an allure for design practitioners that seek to make impactful social change. However, using design thinking for social impact creates many ironies in the current ecosystem of design that is so heavily reliant on private enterprise and capital. Because design is funded by this market, deep examination of the underlying wicked problems that it creates is discouraged and thus “rendered invisible before the design process even begins.” (Kramer et al., 2016). For each of the scenarios we see that anti-Black racism is not only a symptom or outcome, but a precondition to create these technologies (Benjamin, 2019, p. 44). If design as a practice is truly about problem solving, it is critical that it grounds itself in holistic problem-diagnosis that accurately understands the entirety of a problem (Williams, 2019, p. 11). In many cases, by introducing design thinking processes, it only helps to further obscure the true issue by interjecting problem-solving frameworks that ultimately distract us all. In the worst cases, the designs that these groups make are woven into the very fabric of society.

In the next chapter, we’ll discuss the connection between design and race to understand how innovation helps technologies stay relevant.

III. RACE AS A TECHNOLOGY

As one of the key stakeholders in creating and launching new technologies, designers are not only obligated to re-examine their human-centered methodologies, it is also imperative that they understand the larger implications of their work in society.

Positioning the designer as “toolmaker” has given them the power and influence to create products and services that have the potential to be adopted by people all over the world.

Many of us interact with these products every day as they have become a part of our routines and schedules. Other products are so ingrained into the very makeup of society that they aren’t even understood to be outputs created by designers. These products can also function as a kind of technology. Technology, in the contemporary sense, is typically visualized as mechanical devices or software that help to make a task easier or more efficient. *Technologies* at their core are tools used to make a means to an end. For the sake of this exploration, I ask that you not only think of technology as hi-tech machinery but also as a force that exists as a mechanism. These technologies are not limited to tangible devices but can also exist as symbolic tools that structure society (Benjamin, 2019, p. 36). In this chapter, I explain how race exists as a mechanism-type technology that has slowly compounded and expanded over time and now embedded itself into machine-type technologies with the help of innovative upgrades.

Mechanism-type Technologies

Mechanism-type technologies are best described as ideas or ideologies. They exist as invisible tools that society abides by even though they are never seen or heard. One example of a technology of this sort is race. We are all governed by our race one way or another but it’s not often that we think about race as a type of technology or tool. From

the onset, race was designed with a set of features and components that worked for the time in which it existed. In the context of the Western society, race was created to preserve whiteness and any extension of whiteness including wealth, land, and resources through laws, governance, and the institutions that **designed** them to be that way. However, like any other technology, race requires maintenance and upgrades with the ever-changing “hegemonies, social conventions, counter movements, and political interests” to improve its overall efficacy (Williams, 2019, p. 4). Race is a technology that requires updates (Benjamin, 2016, p. 2227). For those racialized as Black, there are plenty of examples of updates to race. One example is the three-fifths compromise, used to count only 3/5ths of the enslaved as part of the population to avoid taxation and gain seats in the House of Representatives. Another update, “the one drop rule,” was used to determine if any person has one drop of “black blood” in their lineage to designate their second-class citizenship. To be innovative, race must be iterative to keep up with the world around it and the needs of who it serves – white people.

In the book “Race After Technology” author Ruha Benjamin discusses how “race itself operates as a tool of vision and division” (Benjamin, 2016, p. 36). The ideological concept of race has been used as a technology to commit crimes against humanity across the globe. In the United States, race was used as a tool to establish a human trafficking system best known as the Transatlantic Slave Trade as a means to enslave African peoples to be used as chattel and bolster the American economy. Race is a technology that was designed to organize societies, and in this case, establish the system of global capitalism and the entire economy for the United States (Williams, 2019, p. 3).

The foundations of race and racism in the United States started in conjunction with the growing human trafficking of African peoples by Europeans. In order to do this as Christians, however, they needed to find a way to justify their actions. To do this, the European elite employed a designer to create their vision of society. Gomes Eanes de Zurara, a Chronicler and Archivist, was a Portuguese man who was hired by the King of Portugal to write a biography about the King's uncle Prince Henry the Navigator. Prince Henry was the first major human trafficker to traffic African people in the mid-1400's. In this book, he grouped African people together – regardless of their various languages and cultures – and racialized them as Black people. He described them as beasts that only knew how to live lowly lives and justified Henry's capture of them as a means to save Africans by bringing them to a life of Christianity (Biewen, 2017). Dr. Ibram X. Kendi, a Historian, Professor, and the Director at the Center for Antiracist Research at Boston University, credits Zurara with being the first person to articulate racist ideas. He does this not by describing himself or his sponsor in this endeavor, but rather by creating the idea of "Blackness" in describing Africans. By creating this concept of Blackness he also, Kendi explains, creates its presumed antithesis – whiteness (Biewen, 2017). Put more succinctly, European human traffickers commissioned the creation of racist ideas about Africans as a means to justify their dealings in human capital – even the designer that created racism had clients (Biewen, 2017). With the stroke of a pen, race was invented and formulated to be a technological mechanism systematically created as an apparatus to rationalize crimes against humanity and maintain a steady flow of cash into Western human trafficking businesses. For them, racism created revenue and value for their

wellbeing while creating chaos, unimaginable pain, and death for millions for generations (Benjamin, 2019). By framing race as a technology we begin to understand race as a product that dehumanized an entire race of people by design.

The Contradictions of Race

Race as a tool to oppress one group for the benefit of another is not an incredibly complex concept to grasp. Historically speaking, events such as the Transatlantic Slave Trade and the Holocaust make that connection obvious. This hierarchical categorization of people through the “scientific” concept of race has been used by numerous groups all over the world to gain power (Chung, 2009, p. 8). Racism and racists’ fabricated theories worked to maintain the incredibly apparent contradictions present in each narrative respectively. Ruha Benjamin makes this idea clear in regard to those that were ultimately racialized as Black people in America with the following quote:

“Only a society that extolled ‘liberty for all’ while holding millions of people in bondage requires such a powerful ideology in order to build a nation amid such a startling contradiction. How else could one declare ‘[w]e hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights,’ and at the same time deny these rights to a large portion of the population.” (Benjamin, 2019, p. 36-37)

Race was also used as a tool to garner permission to make these structures the way the elite wanted them to be without potential for the same consequences to be reflected back

onto them. In “Race and/as Technology; or, How to Do Things to Race,” author Wendy Chung describes race as a “mapping tool” that originated from scientific categorization that was solely based on observed commonalities between humans. To take it a step further, these visible commonalities were then attributed to invisible markers such as intelligence and strength, falsely linking the visible with invisible and categorically false characteristics. For people that had been racialized as Black in the United States, their darker skin became a marker for slavery which opened them up to all the circumstances that come with having darker skin before the introduction of the Emancipation Proclamation (or more accurately, Juneteenth in 1865). This technology was later iterated upon with institutions such as segregation and general separation to quell any misunderstandings around where Black people stood in the hierarchy of the world. If Black people were free, what is there to make them any different from the white man? The technology of race allowed white people to turn race into a mechanism-type technology that they could then utilize to separate themselves from Black people in order to gain power.

By recognizing race as a technology that was specifically designed to subjugate acknowledges the creation of race as a product of design but also as a string of falsehoods (Williams, 2019, p. 4). These “fictions” continue to compound and obscure over time to create false understandings of people and the societies that house them. The concept of Blackness from its conception to present day, is used as a mechanism-type technology to add to the *white supremacist capitalist patriarchy*. A term coined by author and scholar, Gloria Jean Watkins, known by pen name bell hooks, white supremacist capitalist

patriarchy describes an institutional structure of “interlocking systems of domination” (hooks, 2006) that function simultaneously.

“Race constructs a sense of affinity around whiteness that preserves the interests of wealthy, capital-owning whites, while producing marginal residual benefits for the broad category of white people, and generating significant detriment for people of color and poor white people.” (Williams, 2019, p. 5)

Machine-type Technologies

Machine-type technologies are a little easier to conceptualize in comparison to mechanism-type technologies. *Machine-type technologies* are tools that bring ideas (mechanism-type technologies) to life and make them true or believable. For example, mechanism-type technologies like race need machine-type technologies like skin color in order to be valid and accepted by broader society. For the professional designer, a machine-type technology could exist as a medical device, an interface on a cell phone, an event, or a number of other outputs but they always begin as an idea from the designer or their client. While machine-type technologies can come in the form of products and services that we all interact with, they can also come in the form of institutions and industries that organize much of society. Simply put, machine-type technologies ground mechanism-type technologies in reality.

It is often assumed that racial biases will be filtered out of the system because they are scientific and perceived to be neutral (Benjamin, 2019, p. 7). For the designer, new products created with design thinking methodologies lack cultural awareness and create

an imbalance of power between designer and their client collaborator but will often disguise themselves as data-driven, progressive, and innovative. Under a critical eye, however, we find they're composed of assumptions and biases that reinforce the status quo. In her book "Race After Technology", author and scholar Ruha Benjamin calls this phenomenon the New Jim Code. *The New Jim Code* describes "the employment of new technologies that reflect and reproduce existing inequities but that are promoted and perceived as more objective or progressive than the discriminatory systems of a previous era" (Benjamin, 2019, p. 5). The New Jim Code is derived from Michelle Alexander's 2012 book *The New Jim Crow* where she explains how the US carceral system has created a new kind of caste system that uses colorblind ideology to legally discriminate against people considered to be criminals. The New Jim Code describes what happens when these sorts of codes are inserted into hardware and software and includes four concepts that define its functions: Engineered Inequity, Default Discrimination, Coded Exposure, Technological Benevolence.

Engineered Inequity

Search engines in the 21st century are a way of life. They act as a guiding tool that almost everyone with access to the Internet uses to answer basic questions, get directions, do research, or even socialize with others. Companies like Google.com, however, are not information hubs but advertising companies that rank their search results based on whoever pays the most to be in that position. In "Algorithms of Oppression: How Search Engines Reinforce Racism" Professor Safiya Umoja Noble details how algorithmic failures can lead to harmful results for women in people of color. She was inspired to

write the book after a google search for “black girls” produced pornographic images of Black women and girls. These results exemplify what Noble calls *algorithmic oppression* – a term that describes the structural ways that racism and sexism are built into technologies (Noble, 2018, p. 4). In her novel she details how Black people have been contained and classified into organized groups as a means to reinforce social relationships and create new ways to racially profile Black people. With a single online search she would see long standing racist stereotypes that depict black girls and women as oversexualized in a new, technological package. In the New Jim Code, this is an example of *engineered inequity*. Engineered inequity describes technologies that work to amplify social hierarchies of race, class, and gender. (Benjamin, 2019). Noble’s research shows how technologies can double-down on hierarchies already defined by society and create digital tools that either neglect the fact that they are harmful or create them purposefully in the hopes of gaining profit.

Default Discrimination

Glitches – or malfunctions – are also a common experience with new technologies. In most cases a glitch would suggest something in the system is broken – perhaps a line of code or even an unlinked database. Some glitches, however, signal a much bigger problem in what is often thought of as a near-perfect technological system. As an update to their Google Photo app, Google released a tagging system that was meant to act as a tool that allows users to search through their photos more quickly and efficiently by auto-tagging user’s faces. In 2015, a Black software developer named Jacky Alcine found that Google’s Photo app auto-tagged him and his girlfriend with the label “gorilla” (Grush,

2015). This is an example of *default discrimination* in the New Jim Code. Default discrimination describes technologies (and the Technologists that make them) that ignore social divisions and do not consider social and historical contexts in their development (Benjamin, 2019). Instead of creating a tagging software that grouped like objects by keyword, Google's artificial intelligence software revitalized historical traumas surrounding Black people being depicted as monkeys. While Google's engineers apologized for the error, Alciné wisely noted the software would have had to be trained to out such results.

"I do have a few questions, like what kind of images and people were used in their initial priming that led to results like these." Jacky Alciné ("Google Apologises for Photos App's Racist Blunder," 2015)

Incidents like this cannot be written off as a simple mistake but rather acts a signifier for deeper more foundational issues with the technology.

"The glitch in this context is not an insignificant "mistake" to be patched over, but rather serves as a signal of something foundational about the structure of the world meant to pacify humans." (Benjamin, 2019, p. 85)

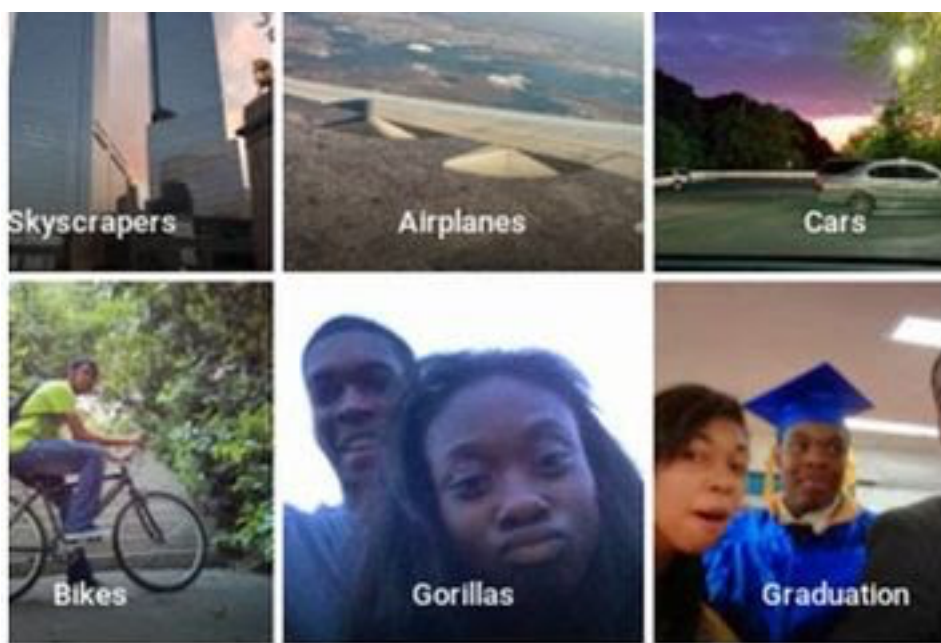


Figure 6. Photo of various digital photo albums. 2015. Screenshot.
Programmer Jacky Alciné found that Google tagged him and a friend as “gorillas.”

Coded Exposure

Facial recognition technologies, or technologies that monitor people’s faces to determine their identities, have been used for everything from unlocking phones to picking up deliveries. Coded exposure in the New Jim Code describes how the invisibility of racialized people is connected to their hypervisibility in new and old forms of surveillance (Benjamin, 2019). In a now infamous TEDx Talk, Computer Scientist Joy Buolamwini talks about “the coded gaze” or the concept of algorithmic biases that are programmed into technologies (TED, 2017). In the 2017 video, she shows how facial recognition software fails to “see” or read her face because of her dark skin. This failure renders Buolamwini completely invisible until she covers her face with a white plastic mask – only then can the software successfully see her and read her now covered face. In 2016, the Detroit Police Department (DPD) decided to use facial recognition technologies

for a much different reason – surveillance. Project Greenlight (PGL) used video surveillance technologies and high-definition cameras to monitor streets throughout the city. The data from the cameras stream to the police department and tested against drivers’ licenses, state IDs, and criminal records to find matches for residents in the state of Michigan (*Project Greenlight Detroit*, n.d.). While the PGL system seems helpful in curtailing crime on the street, it is not equal. The stations that record and track movement are all located in majority-Black neighborhoods and purposefully avoid areas where the majority of the population is white or Asian. The project has also expanded quite heavily in the last four years. When it began in January 2016, it included eight cameras located at gas stations around the city. As of April 2020, there are now 700 locations with cameras. While Buolamwini’s work shows how some technologies can completely fail to see or acknowledge Black people to the point that it renders them invisible, the Project Greenlight project exemplifies what it means to be hypervisible under a system of very specifically, unequally placed racial surveillance devices. Benjamin explains the paradox of visibility as a Black person living in America:

“...a key feature of Black life in racist societies is the constant threat of exposure and of being misread; and that being exposed is also a process of enclosure, a form of suffocating social constriction” (Benjamin, 2019, p. 99).

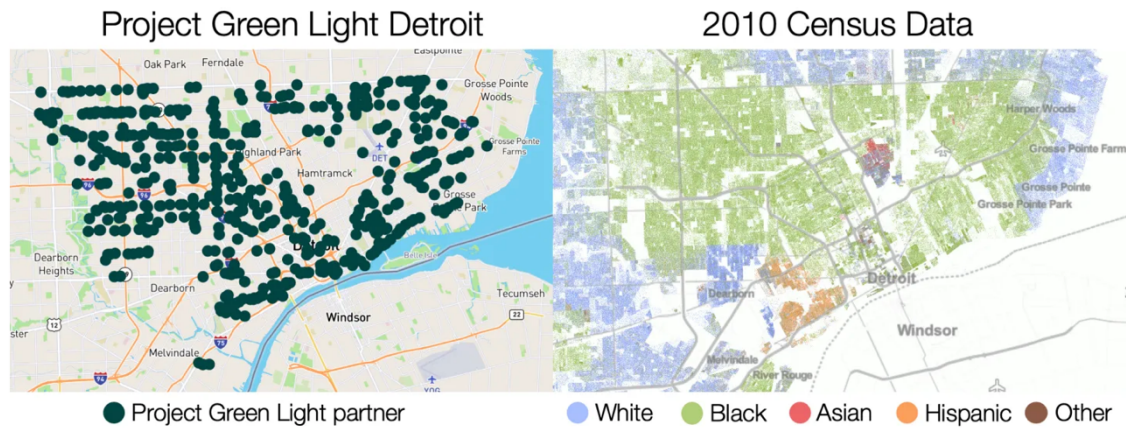


Figure 7. Project Green Light Detroit. 2020. Digital Image.
Project Green Light locations in comparison to Black communities in Detroit, MI.

Technological Benevolence

For many police departments around the United States, body cameras have been utilized to help hold officers accountable and make police departments and their tactics more transparent. For citizens, body cameras are a necessary tool to help to document excessive use of force that statistically befall communities of color. Police reform activists hoped the use of body cameras would be a way to not only gain visual evidence when police violate human rights but to also be able to use that documentation in court. In addition to being yet another example of a technology that surveils people in communities of color, body cameras in many cases have not led to convictions of police that have killed Black people in the streets. This is an example of technological benevolence or technologies that claim to address social problems and offer technological fixes for social biases but actually work to deepen inequities (Benjamin, 2019). In a recorded police murder of a Black man named Walter Scott the jury couldn't reach a verdict and ultimately sided with the police officer even as he shot Scott yards away from

him. These technologies show that even with the right intention technologies cannot bypass human biases even when there is recorded evidence. The problem itself is systemic in nature and body cameras act as a fix to distract the public from the fact that there is true reform needed.

What is innovation?

Innovation describes the concept of introducing a new feature to update a current product or service. Products continuously upgrade and update themselves as a means to maintain relevance and utility for the time period in which they exist with the help of innovation.

In her 2016 essay, Ruha Benjamin describes this transformation:

“Homemade nooses are upgraded to state-issued firearms. Violent voter intimidation tactics are replaced with voter ID laws. Government-sanctioned redlining is succeeded by predatory lending. Top-down eugenic policies give way to reproductive technologies that allow consumers to select ‘socially desirable’ traits.” (Benjamin, 2016, p. 2228)

In the 2019 essay titled “The Co-Constitutive Nature of Neoliberalism, Design and Racism,” author Lauren Williams likens many markers of social design – or design that aims to solve social and societal issues – to an idea called “moves to innocence” (Tuck & Wayne Yang, 2012, p. 3). Moves to innocence, in the simplest terms, is a distraction. It is used to conceal the need to fundamentally change behavior or nefarious institutions to relieve feelings of guilt or responsibility. In the world today, it is becoming far more apparent that many of the challenges that we face on this planet have reached the point of

being unfixable. The only way to rectify many of these problems is by shifting the paradigm to completely change our values, attitudes, and collective behavior. In the practice of social design, moves to innocence can look like “hyper-individualized interpretations of system scale problems” (Williams, 2019, p.11).

Design seeks to move to innocence with the help of innovation and the contemporary understanding of design has positioned itself as one of the main drivers of innovation (Williams, 2019, p. 309). Innovation is the lifeblood that runs and funds the practice. Similar to its companion optimization, innovation seeks to enhance an experience not through small, incremental changes but by completely rethinking the way a product or service is experienced. Design itself is also innovative. Not only does it drive capitalism by creating new, innovative products and services but also the consumption of those very products through marketing. It understands how to reinvent itself and its offerings to remain relevant to the global economy and the elite powers that fund it. Like the technologies it creates, design also needs routine upgrades. In the world of professional design, everything is a work in progress that can always be more efficient. Design thinking as a framework is a strategy that streamlines innovation but that doesn't mean that the innovation is benevolent:

“In formal economic terms, ‘innovation’ involves the diffusion of new things and practices. The term is completely agnostic about whether these things and practices are good.” (Russel & Vinsel, 2016)

Innovation exists for mechanism and machine-type technologies in the form of coded languages, laws, institutions, edifices, and policies. Innovation has offered us two key ways of functioning: it sunsets its outputs and replaces them when they no longer serve their purpose but also has the ability to iterate and build upon itself. Both of these functions of innovation can compound across time and over the course of many generations. For professional designers, innovation is a term that sells the concept of the designer as businessperson (and this designer-as-innovator) to big business (Bierut, 2005, p. 1). In a 2005 essay titled “Innovation is the New Black” by designer and educator Michael Bierut, he describes the buzz around innovation in the business world:

“It’s not hard to see why innovation is becoming the design world’s favorite euphemism. Design sounds cosmetic and ephemeral; innovation sounds energetic and essential. Design conjures images of androgenous figure in black turtlenecks wielding clove cigarettes; innovators are forthright fellow with their shirtsleeves rolled up, covering whiteboards with vigorous magic-markered diagrams, arrow pointing at words like “Results!” But best of all, the cult of innovation neatly sidesteps the problem that has befuddled the business case for design from the beginning.” (Bierut, 2005, p. 2)

Innovation for design is certainly the New Black – or perhaps more accurately – the Neue Black. In fact, designers innovated design as a practice by creating frameworks such as human-centered design to get the business world to pay attention and find utility in the designer. Beirut credits IDEO as one of the leading actors in creating the “don’t-think-of-it-as-design-think-of-it-as-innovation” ethos that used to only exist on the fringes of the

practice (Bierut, 2005, p. 3). In truth, businesses have a lot to gain by having designers at the table to help make business decisions. In a 2018 report by McKinsey & Company, they tracked the design practices of 300 companies over the course of five years to find out how design-based actions unlocked business value (Sheppard et al., 2018). They created what they call the McKinsey Design Index (MDI) which is a measure that rates the strength of the design at a company and matches it up to their financial performance. The MDI score has 4 themes that outline the value of design:

Analytical Leadership: Measure and drive design performance with the same rigor as revenues and costs. (Sheppard et al., 2018)

Cross-functional Talent: Making user-centric design everyone's responsibility, not a siloed function. (Sheppard et al., 2018)

Continuous Iteration: De-risk development by continually listening, testing, and iterating with end-users. (Sheppard et al., 2018)

User Experience: Break down internal walls between physical, digital, and service design. (Sheppard et al., 2018)

The results of the study revealed “a strong correlation between high MDI scores and superior business performance” in all three of the industries they studied – medical, technology, consumer goods, and retail banking (Sheppard et al., 2018). They also found

that the change in revenue between the yearly quarters was marginal meaning that these companies had a lasting effect on their customers and the market. By making design a priority, businesses put themselves in the position to create products and services that their consumers want to partake in. For businesses, more consumers means more money in their pockets. For the designer, increasing revenue for businesses is quantifiable utility in their practice.

Mechanism + Machine Working Together

Now a dominant buzzword and ideology largely because of large Western tech companies, innovation has inspired everyone from techies in Silicon Valley to community members in grassroots organizations all for the pursuit of creating something new and novel. Most innovation at large tech conglomerates such as Microsoft and Amazon start with an origin story about a young, white guy in his garage trying his best to make something out of nothing. These stories have created a culture of fervor, inspiring young technologists and creatives to try to make disruptive products and use Uber-like business models as the blueprint for success. In many ways, these rags to riches stories are another kind of symbolic, mechanism-type technology that sells an upgraded, hi-tech version of the American Dream that moves away from assets such as homes with white picket fences to code-based capital such as apps and devices.

“To take the place of progress, ‘innovation’, a smaller, and morally neutral, concept arose. Innovation provided a way to celebrate the accomplishments of a high-tech age without expecting too much from them in the way of moral and social improvement.”

(Russel & Vinsel, 2016)

Innovation, however, is not equal and this inequality can be measured. In a 2020 podcast for NPR's Planet Money, Economist and Professor Dr. Lisa Cook, measured innovation by counting ideas in a very simple way – patents. Dr. Cook studied data from 1870 to 1940 to compare the number of patents awarded to Black and white inventors (NPR, 2020). She then measured violence and a lack of rule of law by looking at data about lynchings and segregation laws to understand the impact of overall innovation. With her research, Dr. Cook was trying to figure out if one of the biggest theories in economics had a giant hole in it. This theory, called the Endogenous Growth Theory, states that there is unlimited potential for economic growth with investment in human capital, innovation, and knowledge. Introduced by Economist Paul Romer in the mid-90's, the Endogenous Growth Theory later won a Nobel Peace Prize in Economics in 2018 (*All Nobel Prizes*, n.d.). In total, Dr. Cook found 726 patents filed by Black people between 1870 and 1940 but quickly found that there was a sharp decline in the patents by Black people at two different points in history – one in 1900 and another in 1921 (NPR, 2020). In the end, she connected the two years to two major events in American history. In the year 1900, the Supreme Court ruled that a separate but equal America was lawful and segregation was etched into law and in 1921, white murderers killed up to 300 Black Americans and destroyed what is known as Black Wall Street in the Tulsa Race Massacre. Ultimately, Dr. Cook found that Black inventors filed fewer patents during times of increased violence against Black people in the United States and conversely these inventors filed more patents when that violence decreased. She hypothesizes that the United States lost

out on about 1,100 patents from Black inventors which is equivalent to that of a medium-sized European country during that era (NPR, 2020).

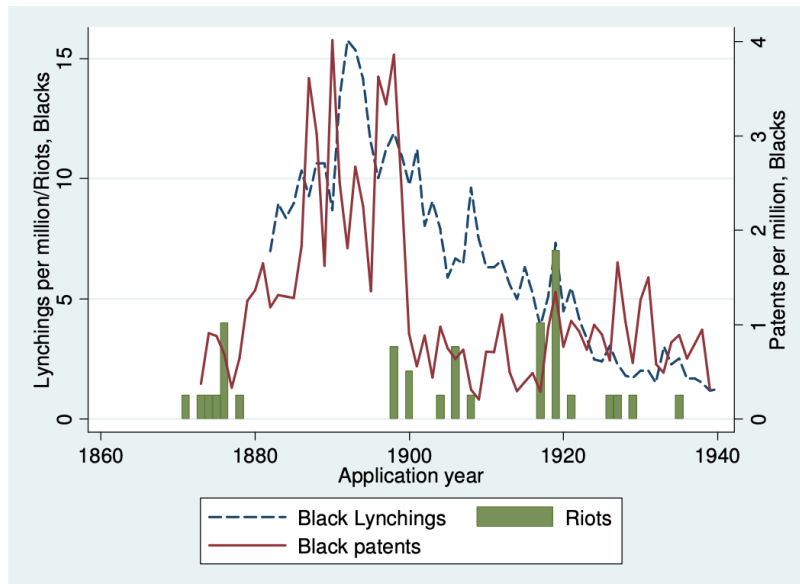


Figure 8. Conflict and Black Inventive Activity from 1870-1940. 2013. Digital Chart. In the chart from her 2013 research project entitled “Violence and Economic Activity: Evidence from African American Patents, 1870 to 1940,” Dr. Lisa Cook shows the correlation between violence against Black people and filed patents.

Machine-type and mechanism-type technologies clearly have the ability to work together to serve the needs of the powerful. In this example, the mechanism-type technology race – or the idea of race – led to real consequences against Black people in the form of racist laws and violence. Ideas and output are intrinsically connected and they are not neutral. While it may be “good” for some and horrible for others – it affects us all.

Innovation Over Time

Innovation has implications in present times but also in the future. In an article titled “Jefferson, Hip-Hop, and the Oppressive Grid,” Sekou Cooke and Nadia M. Anderson

discuss how architectural methods such as the alleged “benign grids” were specifically built into the world around us to control our environments. In this article, they explain how the grid as a design tool has been used to organize and plan cities and territories by some of the most powerful men in this country’s history – like Thomas Jefferson. Cooke also explains how this dedication to the grid structure solidifies the connection between Jefferson’s “geometric preferences” and his need to control other human beings, much like the many enslaved Africans he owned personally:

“His allegiance to grids, and other forms of Euclidian geometry, as used for special delineation and measurement of human beings and land as productive capital, illustrates the oppressive potentials of these tools.” (Cooke & Anderson, 2018, p. 103)

These systems of the past result in futures purposefully designed to be unequal. In the article, Cooke and Anderson point to the repercussions of these biased systems that have led to differing rates in homeownership for people of color and lower property values in neighborhoods that have been racially segregated. An example of the benign grid from Cooke and Anderson’s exploration can be found in the city of Austin, Texas. A liberal oasis in the red state of Texas, Austin currently stands as the 10th most economically segregated city in the United States and in many ways, it was constructed to be that way (Badger, 2015). In the early 1900’s, Black and Hispanic residents in Austin lived in small communities across the cities (Zehr & Harrell, 2015). By 1917, the U.S. Supreme Court ruling decriminalized anti-segregation zoning laws making it legal to develop new policies to isolate minorities and by 1928 Austin had created "Negro Districts" to keep all

Black people in one area in the city (Zehr & Harrell, 2015). Should they refuse to live in such districts they were denied access to schools and use of public services such as utilities. The 1935 New Deal Plan, championed by President Franklin D. Roosevelt, reinforced this segregation through the practice of redlining or denying or charging more for goods or service for people of color (Zehr & Harrell, 2015). Government-backed mortgages were not offered to redlined districts and the newly outlined Black neighborhoods were restricted from obtaining mortgages, leaving Black residents without the opportunity to participate in one of the most significant efforts to build household wealth in U.S. history. In 1956, this segregation was further reinforced with the construction of Interstate 35 which to this day acts as a physical barrier between east and west Austin (Zehr & Harrell, 2015). This barrier keeps white residents and all the perks that come along with generational wealth on “their” side of the highway.

Since 2009, Austin has had the highest level of income segregation in the country's largest metro areas and as the population grew, physical separations between the rich and poor were only accelerated (Badger, 2015). In addition to blocking minority residents of Austin from the country's single-largest accumulation of household wealth, redlining denied them the opportunity to gain compound interest to benefit future generations. In the contemporary context, this exclusion has increased discrimination, crime, limited minorities from exemplary school systems, and beckoned passive public policies that continue to enrich the deeply racist nature of the city.

In addition to reevaluating their coveted frameworks, it is imperative that designers think about how their work may influence the world over time and across generations. It is the responsibility of the designer to dig deeper into the raw materials to assess the very building blocks that their frameworks are based upon.

Neutrality & Adaptation

Technologies reinforce social norms and uphold the status quo under the guise of their perceived neutrality with the help of innovation. These “amnesic-inducing technologies” (Benjamin, 2016, p. 2,228) created as a result of innovation, often concealed in post-racial garb, seep into the community under the guise of being future-facing and progressive. The problem is not only that this innovation breeds inequity (and vice versa) but additionally, many are less likely to question the changes because they are perceived to be progress. Innovation has great PR.

Case Study: Beauty AI

In “Race after Technology” Ruha Benjamin shows how mechanism and machine-type technologies can work hand-in-hand to not only extend racist ideologies but also hide them in plain sight. Using artificial intelligence (AI) or what she refers to as “racist robots” as an example, Benjamin posits that machines can learn to be racist and reproduce the same biases and assumptions as their creators. Using Beauty AI, the first beauty contest judged by robots as an example, Benjamin notes that all winners of the contest were white except for six contestants. The robot was trained to understand beauty by an algorithm and unfortunately, that beauty did not include anyone with dark skin.

With this example, Benjamin exemplifies mechanism-type technologies – race – being extended and compounded upon with the help of machine-type technologies – AI – to create a new type of hi-tech discrimination that can filter out those with dark skin.

NextGen Racism (Benjamin, 2016, p. 2,228) shows how social biases, assumptions, and ideologies can insert themselves into machine-type technologies and evade accountability because of perceived objectivity (Benjamin, 2019, p. 53). This brand of objectivity is not only evasive but mysterious. Because most hi-tech technologies in the contemporary sense are built by those trained with specific skills in programming languages, the public is not privy to a complete understanding of *how* these technologies are constructed to be racist.

Technologies Are Not Neutral

Technologies of any type are not neutral because their creators – humans – are not neutral. This is not to say that there are designers and technologists out in the world that are building technologies specifically with malicious intent. In many cases, it is assumed that racism can only exist if the intention to harm is also present, but this also assumes that self-conscious intentions are necessary to create racism. This would disqualify Beauty AI, a non-sentient machine trained by databases, from being racist and yet the outcome of the contest was, in fact, racist. With this case study we can clearly see that a conscious, living brain is not needed in order to output racist outcomes.

“Part of the challenge of understanding algorithmic oppression is to understand the mathematical formulations to drive automated decisions are made by human beings.

While we often think of terms such as ‘big data’ and ‘algorithms’ as being benign, neutral, or objective, they are anything but.” (Noble, 2018, p. 1)

How Design Fits In

One of the core principles of the human-centered design framework is that the products that designers create should mold to the needs of the user that they’re creating them for – technology adapts to people. Designers should do the work to find out the true pain points and the needs of their users and create solutions to alleviate that pain and meet that need. From the outlined examples, however, we see that the opposite is true – people adapt to technologies (Norman, 2005, p.15).

In the case studies discussed in this chapter, we can clearly see how each technology was tailored to and for the advancement of whiteness. For Beauty AI, “it is not just their programmers’ preference for Whiteness that is encoded, but the combined preferences of all the humans whose data are studied by machines as they learn to judge beauty and, as it turns out, health” (Benjamin, 2019, p. 51). More often than not, when we think about the social impact of technology there are often conversations about ethics and morals.

Questions about how technologists might make the most equitable products and services have moved large tech companies to create boards and councils to help them navigate the complicated waters they must tread. We’re taught to think about racism as a glitch in society – something that exists for those on the fringes – however, our values as a society existed far before machine-type technologies of this sort did. Racist ideals that uphold the status quo can leak into the system even when they are created by the most conscious and well-intentioned technologists and designers.

Conclusion

Technology is not only machinery but also invisible mechanisms that exist in society.

Thinking of race as a technology allows for more freedom to understand what race is at its core – a type of tool. This reframing also allows us to think about the ethics of race as it exists today rather than the construct of race itself. With the New Jim Code framework, we have the tools to understand how many new technologies recreate existing inequities. Sitting under a thin veil of progress, technologies are perceived as objective and scientific which often leaves them feeling like neutral entities, when in reality, they often center whiteness as the default setting (Benjamin, 2019, p. 48). Both types of technologies are updated through the process of innovation to keep up with the status quo of the era in which they exist. Societies and users of these technologies adapt to the changes to keep up with the upgrades.

In the next chapter, I will delve into a theoretical framework that understands race as a technology and exemplifies how human-centered design creates a blind spot for society in the pursuit of innovation.

IV. INTRODUCING THE THEORETICAL FRAMEWORK

World renowned Industrial Designer Dieter Rams once said, “Good design is as little design as possible” (Lovell, 2011, p. 1). In the most innovative cases, design is so well integrated into society that it is rendered not only invisible but has also been defined and ordained as the status quo. Typographer and Printer Beatrice Ward describes how typography – the lifeblood of graphic design – is actually considered best executed when it is invisible:

“Type well used is invisible as type, just as the perfect talking voice is the unnoticed vehicle for the transmission of words, ideas.” (Warde, 1956, p. 2)

Since a designer can be anyone that has the power to make a decision that will affect a group or the environment, the design thinking frameworks that professional designers use are not the only way that products of design can exist in the world. After all, generations of designers of this definition were creating work long before the introduction of design thinking and human-centered design. Let us not forget, the concepts of both “Blackness” and “whiteness” were created and further innovated with the help of updates and upgrades for the sole purpose of organizing society while accommodating blatant contradictions solely for the purposes of the elite.

Human toolmaking, in many ways, is only limited to the imagination of the designer or their client – whoever they may be.

Commodification and/of the Designer

We are all surrounded by artifacts that were crafted and created by professional designers. Books, websites, furniture, roadways, even the letters we type are all created by designers. Designer Andrew Howard explains that design has the ability to “create and sustain ideas about what is normal and desirable. They are cultural expressions designed to influence our aspirations and fuel our desires. They impel us to participate in the creation of lifestyles that demand the acquisition of goods as a measure of progress and status” (Howard, 2000, p. 1).

Commodification describes the buying and selling of goods but it can also mean the process of turning atypical entities into marketable goods and services that can be sold on the consumer market (Njee, 2016, p. 115). “In capitalist political economies, land, products, services, and ideas are assigned value and are bought and sold in marketplaces as commodities” (Hills-Collins, 1990, p. 298). Since design functions within a state of fictions, it prides itself on serving the interests of its users and the groups it designs for while also catering to the needs of its clients and media (Van Toorn, 2009, p. 102).

Commodification for the professional design practice is more than just the selling of products and services, it’s about selling the idea of all those things to both parties even when it is a direct contradiction.

The creations that designers output mold and shape worldviews (Howard, 2000, p.1). This is most apparent to society in advertising and public media but still holds true for other facets of design. In the year 2000, thirty-three designers reprised a 1964 manifesto

calling for a change in priorities in design. This manifesto, aptly named “First Things First Manifesto 2000,” asked that designers move away from commercial work to use their problem solving skills for more “worthy” projects. In this short essay they argue that designers are creating “a mental environment so saturated with commercial messages that it is changing the very way citizen-consumers speak, think, feel, respond and interact” (Garland, 1999, p. 1). Andrew Howard further explains this thought with the following quote:

“The ideological process of commodification knows no boundaries, which is why we can no longer find refuge in the now defunct distinction between commerce and culture.

Whilst one sells commodities as value, the other sells values as commodities.

Paradoxically, the form of expression and communication they use to do so, are essentially the same.” (Howard, 2000, p. 1)

Data Collection for the Designer

“Blackness” was constructed in the 1400’s to bolster complex human trafficking businesses created by white Europeans. In the contemporary world, Blackness is commodified for consumption within the white supremacist capitalist patriarchy to simultaneously maintain white supremacy and suppress Black people (Njee, 2016, p. 113). In the world of new technologies and media, this could mean simple, linear executions of racism such as misrepresentations of Black culture marketed to the masses. It could also mean covert and camouflaged implementations like datasets with racial biases and assumptions such as Beauty AI or racism coded into technologies we all use, as outlined by The New Jim Code framework from Chapter 3.

The primary way that these outcomes come to exist in HCD is in the process of information gathering, also known as data collection. During the entirety of the design thinking framework, designers are collecting information to inform ideas, pivoting prototypes, and testing solutions using the information they collect. For designers, data collection can be based on qualitative research such as interviews, surveys, and observation and also quantitative data, including trends, stats, and spreadsheets. Professional designers aggregate all the collected data to create products, services, messaging, and campaigns and map it as the north star for their potential output (Visocky O'Grady & Visocky O'Grady, 2017, p. 25).

In contemporary settings, most think of data collection as a matter of privacy and security. According to a study done by Ipsos-World Economic Forum, citizens have no idea how their data is being used even in the most economically advanced countries (“Ignorance and Distrust Prevail About What Companies and Governments Do With Personal Data,” 2019). Data collection, however, goes far beyond accepting cookies and haphazardly ticking the checkbox confirming you have read the terms & conditions even when you haven’t.

Data is a conversation about power and influence and while the issues surrounding data may seem new, many of the practices we experience now have been in place for generations. The collection of big data started with the biggest economic accelerant this country has ever seen – chattel slavery. The term ***big data*** describes larger, more complex

data sets (Oracle, n.d.). Chattel slavery was not a fluke but a well-designed system that provided the environment for testing many of the practices viewed as “good business practices” today in a capitalist society (Milner & Amy Taub, 2021). By trafficking Africans and enslaving them into inhumane labor, colonizers created “the template for other colonial powers to use similar strategies to advance colonialism and imperialism.” (Milner & Amy Taub, 2021):

“Data on enslaved people and data on the business operations of plantations and slave traders flowed up and down hierarchies of management and ownership. From this flow of data, plantation overseers, slave owners, and slave traders were able to disassociate in the name of optimization and efficiencies...This data flow and the reduction of human life into mere data points, like today’s data flows in corporations and the use of datasets by CEOs and corporate boards, allows for people at the top of the hierarchy to be responsible for the harm they cause but never accountable to the people they have harmed.” (Milner & Amy Taub, 2021)

Chattel slavery was the first example of Black people being used as a source for data as a means to control society and establish power. In my proposed framework, it is certainly not the last:

“Planters’ control over enslaved people made it easier for them to fit their slaves [enslaved African people] into neat empirical rows and columns.” (Rosenthal, 2018, p. xii)

The Technological Forecasting Framework

For this exploration, I offer a cohesive theoretical schema called The Technological Forecasting Framework that explains how designers create a proverbial black box that treats Black people as a free and infinite source from which to collect data – all in the name of innovation. A **black box** “is a metaphor commonly used in STS to describe how the social production of science and technology is hidden from view” (Benjamin, 2019, p. 34). Often understood in the context of recording devices in transportation vehicles such as planes and ships, the term black box used in this definition has an additional meaning – one that denotes feelings of mystery. In this framework the black box is the space where innovation happens. Because innovation is concentrated mostly within white power structures, most have no idea how they’re created. I also introduce a new concept – a translucent black box. A **translucent black box** in this framework describes the partial view into how products are being created when design thinking is involved. When designers use primary research methodologies such as interviews and surveys, the end user has some idea about what the designer aims to find out though they may not completely understand the goal of the investigation. In this instance, users have a general understanding that *something* is being created and yet their access to the production of this new product is still impeded.

In this framework, even as the person in the role of **designer** and the product they create changes, the never-ending pursuit of innovation renders the beneficiary of the outcome the same – white people. Black people, on the other hand, exist solely as an inexhaustible data source to harvest insights used to help construct and inform the **product**.

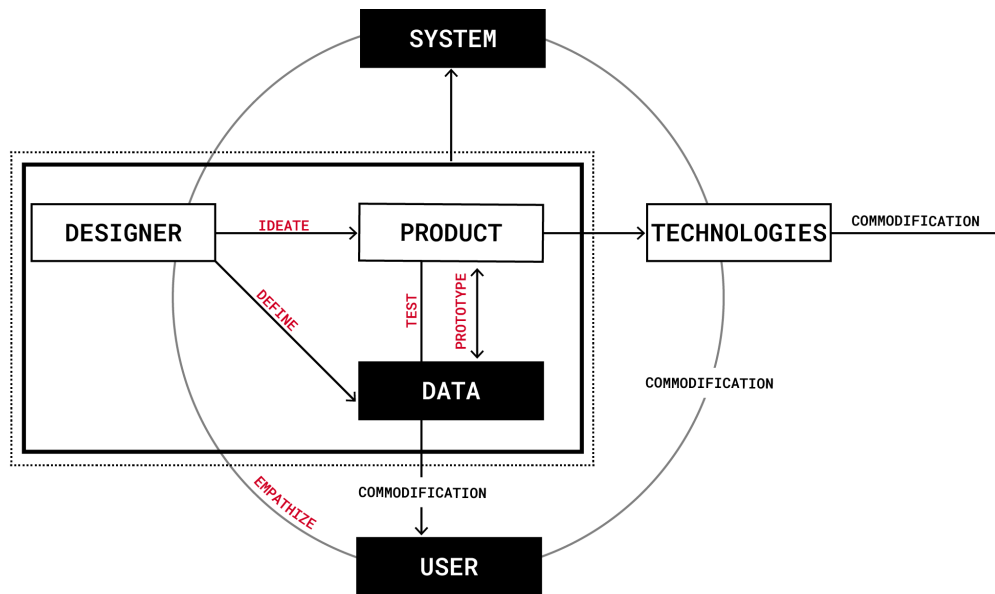
Though Black people were used as the source for data collection, these products were never intended for us by Black people but for what is described as the system, or *white supremacist capitalist patriarchy* on one end and the white *users* on the other. Within the *black box*, the product is continuously innovated to manufacture a *mechanism and/or machine-type technology* that further compounds and expands the reach of the product. These technologies have the ability to be commodified in later work by future designers. In this framework, *commodification* is the selling of the product itself, selling the idea of the product or the underlying mechanism and/or machine-type technology, and selling the idea of potential future products based on the success and acclaim of the current product. The goal of this framework is to both show how designers and this larger system have always existed (even if history doesn't define them as such) and how the designers of the world build upon one another to create an endless feedback loop between ideas and technologies. Design thinking as a framework is a strategy that streamlines this "innovation" to further obscure the true source. The aim is not solely to unpack this black box but also to illustrate how the professional designer functions as the shepherd and the active perpetrator of this system by using design thinking frameworks such as HCD to drive innovation. This innovation in the name of progress produces visible and invisible technologies that have the power to not only change our present but many potential futures. My hope is that by using this framework designers can begin to think about their responsibility as the creator of these products and potential ramifications of their work:

“Repercussions of biases within these systems of the past extend into political, economic, and spatial conditions of power in the present” (Cooke & Anderson, 2018, p. 103).

In this framework, I’ve also included the five steps in design thinking to show where and how each defined step comes into play in the professional design practice. Because “good” design is invisible design and design thinking is often viewed as a superior kind of thought, it is important that its methodologies are questioned under a critical eye:

“The issue is not simply that innovation and inequity can go hand in hand but that a view of technology as value-free means that we are less likely to question the New Jim Code in the same way we would the unjust laws of a previous era, assuming in the process that our hands are clean.” (Benjamin, 2019, p. 68)

Diagram: The Technological Forecasting Framework



KEY	
	Step in Design Thinking
	Will Change Throughout Time
	Will Not Change Throughout Time
	Translucent Black Box
	Black Box

Figure 9. Leslie Genét Harris. The Technological Forecasting Framework. 2021. Digital Rendering. This diagram explains the functions and the flow of The Technological Forecasting Framework.

V. CASE STUDIES FOR THE PAST AND PRESENT

Designers by Other Names

Design is too varied and too vast to be defined in one way and design's practitioners – designers – can be any individual with the autonomy and intent to make a decision that will affect people or an environment (Creative Reaction Lab, 2019). With this idea in mind, the professional designer, or one that makes products for commercial use, is not the only kind of designer that shapes the way the world or the things in it. Designers can come in many different forms and have incredible potential to impact the very structure of society.

Starting with the Past

Race has never been more apparent as a technology for African and Black Americans that reside in the United States. In this country, skin color is used as a physical marker that not only determines a person's caste in society but shapes their entire existence. By recognizing race as a technology, we can begin to unpack how those in positions of power utilized race as a tool to gain power and capital and how their actions connect to the present we live in today.

Medical Designer: J. Marion Sims

After the deaths of his first two patients, a young medical doctor by the name of J. Marion Sims moved to Montgomery, Alabama in 1845 in the hopes of finding work and making a name for himself (Vedantam, 2017). Eventually, Sims began making a living as a plantation doctor treating enslaved Black people for the white human traffickers that

owned them. Known contemporarily as the “father of modern gynecology,” Sims was a doctor that developed tools and techniques in the pursuit of improving women’s reproductive health during a time when treating women for anything having to do with their reproductive system was seen as a taboo and completely unsavory (Holland, 2017). One of his most well-known inventions is an early version of the speculum used for women’s pelvic exams (Vedantam, 2017) (Holland, 2017).



Figure 10. Model of Sims’ Speculum. n.d. Illustration.
Illustration of Sims’ speculum.

Sims was not as benevolent as he seems, however. With the help of his small, eight-person hospital Sims made a business out of conducting experiments on Black enslaved women. From 1846-1849, Sims worked to create a cure for vesicovaginal fistulas (Holland, 2017). Vesicovaginal fistulas are tracts formed after traumatic childbirth that create a tear in the bladder and uterus that results in pain and urine leakage (Holland, 2017). To find a fix for this condition for enslaved women that were often forced to constantly reproduce, Sims performed harrowing surgeries on Black enslaved women’s reproductive organs without the use of anesthesia – often forcing them to be naked to do

so. If the owners of the enslaved women provided clothing and paid taxes, Sims would even take temporary ownership of these women as they were viewed as property instead of actual patients. Many of Sims' victims are lost to history but in an autobiography he published later in life he names three women that he experimented on – Lucy, Anarcha, and Betsey. While Sims performed experimental surgeries on all these women, Anarcha in particular was subjected to 30 surgeries with no anesthesia before Sims perfected his technique. In this book entitled *The Story of my Life*, Sims details his excitement around the time when he experimented on these women:

“I got three or four more to experiment on, and there was never a time that I could not, at any day, have had a subject for operation.” (Sims, 1884, p. 249)

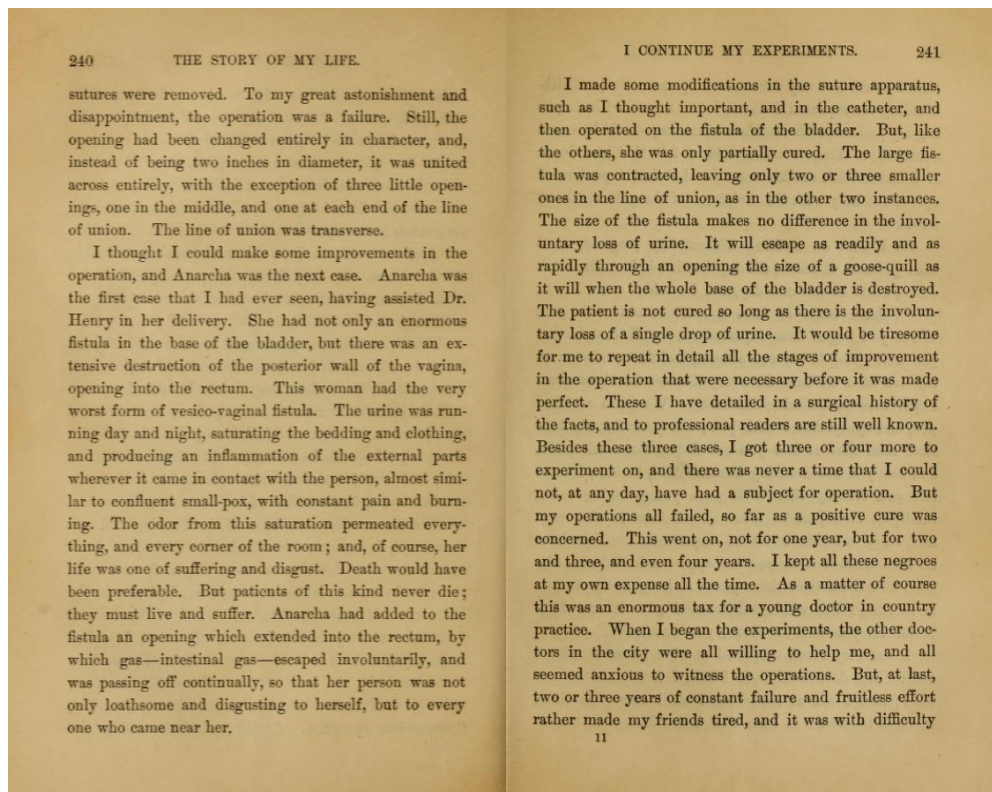


Figure 11. Sims, J. Marion. 1884. *The Story of My Life*. Library of Congress. Excerpt from Sims' biography where he explains an experiment on Anarcha.

Many of Sims' contemporaries, however, questioned his medical and ethical grounds while he was still alive and in practice. Dr. Daniel Hale Williams, a Black American doctor, was incredibly vocal about Sims' inhumanity and frequently criticized him for his actions. Not only were Black American doctors critical of Sims' work but his own assistant claimed that his treatments were not effective. Sims' assistant Dr. Nathaniel Bozeman noted that he was often left to correct many of Sims' failings and even claimed that Sims had created a fistula in the pursuit of curing it for one patient (Washington, 2008, p. 67). Even though this history has been tediously documented by both Sims and other doctors of that time, Sims continues to have support amongst modern practitioners. For them, Sims was a man of his time and simply followed the protocols of that era in terms of how he treated Black women. While it is correct that anesthesia was in its infancy when Sims was doing these horrible experiments, anesthesia was readily available for those who wanted it. In fact, once Sims had perfected his fistula operation on Black women who could not consent because of their literal status as property, he began to fix fistulas for white women with the use of anesthetics. In a meeting with the New York Academy of Medicine in 1857, Sims explains why he didn't use anesthetics on the Black enslaved women:

"This position permits the use of anesthetics if desired, but I never resort to them in these operations, because they are not painful enough to justify the trouble, and risk attending their administration." (Sims, 1857, p. 34)

Implications of the Experimentation

Sims defended the slavery system and used enslaved Black people to his advantage to advance his reputation as a medical practitioner (Washington, 2008, p. 67). He understood that by using race as a technology he would guarantee himself almost unlimited subjects to experiment on. Beyond this, Sims knew what he was doing was morally and ethically wrong and made conscious decisions to only use Black bodies when his methods would be called into question. Historian Walter Fisher reflects on how Sims used slavery as a means to commit these atrocities against humanity:

“...it is most improbable that Sims and [his assistant] Bozeman could have established so remarkable a surgical schedule without the slave system which provided the experimental subject.” – Walter Fisher (Fisher, 1968, p. 48)

The harm created by Sims and his horrible experiments has created a lasting legacy of consequences that are still felt till this day. Sims used race as a tool to not only leverage the slave system and his power over enslaved Black women but also wielded this power to create long standing medical myths about Black people. In addition to believing that Black mothers were morally inept, Sims also believed that Black people did not feel pain the same way as white people do (Washington, 2008, p. 65). In a study conducted in 2015, researchers worked to discover if racial bias was related to completely false beliefs about physical and biological differences between Black and white people (Hoffman et al., 2016, p. 1). In the two-part study they found that the average white layperson who aligned themselves with false beliefs about biological differences between the two groups elected lower pain ratings for Black people. They also found that half of the white

medical students and residents that participated in the study also endorsed these false beliefs and recommended less accurate solutions as treatments for ailments.

Paradoxically, Medical practitioners that did not endorse these false beliefs showed no bias in treatment and rated the Black patients' pain higher. The researchers concluded that white people, even those with medical training, hold and may act upon false beliefs about biological differences between Black people and white people which could be a contributing factor to known racial disparities in pain assessment and treatment (Hoffman et al., 2016, p. 1).

In her 2008 book *Medical Apartheid: The Dark History of Medical Experimentation on Black American from Colonial Times to the Present*, author Harriet A. Washington notes that today the majority of people suffering from these fistulas are poor Black people in Sub-Saharan Africa who often don't have access to healthcare. The people who are a reflection of women like Lucy, Anarcha, and Betsey do not stand to benefit from the sacrifices their ancestors made:

“In this case, the most powerless group, which is also a racially distinct group and a captive group, is the group upon which doctors inflicted harm ‘for the greater good.’ Another, privileged group enjoys the benefits but shares neither the pain nor the risks. The moral unacceptability is clear.” (Washington, 2008, p. 69)

Diagram: The Technological Forecasting Framework in the case of J. Marion Sims

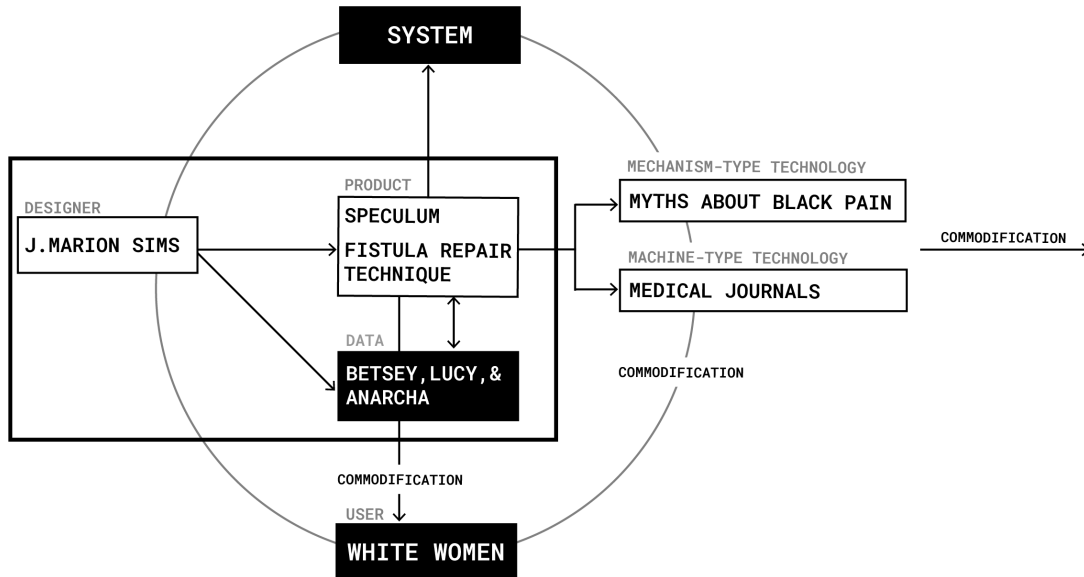


Figure 12. Leslie Genét Harris. The Technological Forecasting Framework for J. Marion Sims. 2021. Digital Rendering.

This diagram explains J. Marion's role as the designer, the products he created, and the technological outputs as a result.

In this case study, J. Marion Sims is a medical designer. He made decisions as a white man and a doctor in a position of power and status with the intent to experiment on Black people. These experiments helped him to gain fame and fortune and ultimately the title as the “father of modern gynecology.” His products, the speculum and the surgical technique that cured vesicovaginal fistulas, exist only because of unethical experimentation on unconsenting Black women. While Sims may have fixed fistulas for a few Black women, the true beneficiary of the new breakthrough was white women who were able to get treated for the same ailment with the additional compassionate use of anesthesia.

Sims adapted to the idea of race as a mechanism-type technology and used it as a tool to gain ownership of enslaved Black women that he could utilize to do his experiments.

With the invention of the speculum and his surgical technique, Sims also designed a more sinister mechanism-type technology – myths about pain tolerances for Black people. Through the process of repeated innovation in the form of new techniques, experiments, and unwilling Black women as participants he was able to use his products as a launchpad to perpetuate lies about Black pain tolerances. These lies were then sustained by the machine-type technology in the form of writings from Sims himself in revered medical journals and books that many of his colleagues would have been privy to. Myths about Black pain is an invisible attribute that plagues Black people until this day and the commodification of Black pain now comes in innumerable formats – some more covert than others.

Scientific Designer: George Gey and Richard Wesley TeLinde

Henrietta Lacks was born in Roanoke, Virginia in 1920 and lived a simple life caring for her husband, children, and as many community members as she could (Skloot, 2010, p.18). In January 1951, a few days after learning she was pregnant with her fifth child, Henrietta went to see doctors at Johns Hopkins to examine what she thought was a “knot” in her stomach (Skloot, 2010, p.13-14). At the appointment, gynecologist Howard Jones found a small, hard lump on Henrietta’s cervix. After sending the sample to the lab for testing, doctors found that Henrietta had “Epidermoid carcinoma of the cervix, stage I” – also known as cervical cancer (Skloot, 2010, p. 27). During this time Jones’ boss, Richard Wesley TeLinde, was on a mission to validate a theory that carcinomas of this type were just early stage cancers that should be treated aggressively early in order to cure patients (Skloot, 2010, p. 30). In order to do this, TeLinde began collecting samples without consent from any woman that came to Hopkins with cervical cancer. He often

used patients from the public hospital as research subjects to test various theories and methodologies. In this era, scientists believed that it was fair to use patients from the public wards as research subjects because they were being treated for free. In her 2010 book, the author of *The Immortal Life of Henrietta Lacks* Rebecca Skloot quotes Howard Jones:

“Hopkins, with its large indigent black population, had no dearth of clinical material” – Howard Jones (Skloot, 2010, p. 30)

After informing Henrietta that she had cancer, doctors brought her in for treatment. To treat her cancer, they used glass tubes filled with radium inside her cervix and sewed them in place – the standard treatment for the era. During this procedure, however, TeLinde had instructed the operating doctor to take more samples from Henrietta’s cervix without her consent or knowledge (Skloot, 2010, p. 33). These samples were then delivered to George Gey – a cell biologist and the head of tissue culture research at Hopkins – to try to grow cells that TeLinde could then compare against normal, non-cancerous tissue. While Henrietta recovered, lab assistants were watching as the cells that they had nonconsensually collected from her grew at record speeds. For Gey, this growth was a sign of creating “immortal cells” or cells that will never die as long as they have proper food and warmth. In his excitement, Gey began to send Henrietta’s cells to any scientist that wanted them and those scientists did the same. For scientists, Henrietta’s cells allowed them to curate experiments that are simply impossible to perform on live humans (Skloot, 2010, p. 58). By using the cells now dubbed “HeLa” cells for Henrietta’s

first and last name, scientists were able to expose them to harsh conditions to see how they reacted without the loss of too much money or human life. If the cells died in the process of the experiment, HeLa's ability to reproduce quickly gave them a reservoir of almost unlimited scientific material.

After her first treatment, Henrietta still didn't feel well and she later checked herself into a hospital after weeks of fruitless doctors appointments. During her second hospital stay, Gey requested that the attending doctor collect more cells (Skloot, 2010, p. 65). He wanted to test to see if the second batch of collected material would grow at the same rate as the first. By this time, however, Henrietta's body was contaminated from her body's inability to pass urine because tumors were blocking her urethra. By the summer of 1951, Henrietta's body was full of tumors making it impossible for her to do anything other than lie in bed in pain. On October 4, 1951, she died at the age of 31 (Skloot, 2010, p. 86).

Building the Biomedical Industry

Henrietta's cells changed the very nature of the medical industry in the United States and across the globe but for many years HeLa cells weren't attributed to her at all. Over the years, many journalists attempted to write stories about Henrietta to give more context about her life and the lives of her remaining family. These attempts to publicize the source of the HeLa cells were squandered by Gey himself. He even allowed a now defunct publication called *Collier's* to run with the name "Helen Lane" to keep the public from knowing Henrietta's true identity (Skloot, 2010, p. 109). The main reason for the ruse was to avoid the Lacks family, who had no idea that Henrietta's cells were still alive.

It wouldn't be until after Gey's death in the early 1970's that Howard Jones, the doctor that originally discovered Henrietta's cancer, wrote an article about the history of the HeLa cells and Gey's achievements over the course of his career (Skloot, 2010, p. 172). Even still, because this article was published in a small scientific journal it wouldn't truly be known until 1973 when a journalist wrote a short article correcting a previous article questioning the origin of the cells and confirming that they were from Henrietta.

Henrietta's cells helped to advance entire fields and built the backbone of many medical practices as they exist today. In the process, however, scientists tried their best to make sure that these breakthroughs in science were never attributed to her or the Lacks family. The National Institutes of Health Office of Science Policy (NIH) website notes that over 110,000 scientific publications from 1953-2018 cited the use of HeLa cells in their studies (*Significant Research Advances Enabled by HeLa Cells*, n.d.).

For scientists, HeLa cells became the sample of choice for all kinds of biomedical research and helped to establish the very baseline for best practices in their respective fields. Below are some of the improvements to the sciences that are a direct result of HeLa cells:

Freezing Cells: HeLa was used by scientists as a means to develop a method that would allow them to freeze cells without killing or damaging them. This not only made it easier for scientists to store their cells during experiments, but it also made it possible to mail cells across the world without them dying (Skloot, 2010, p. 98).

Solving the Polio Crisis: HeLa Cells helped scientists grow the virus that caused polio which ultimately helped them to understand how the polio virus works. These discoveries led to the creation and development of the polio vaccine (*Significant Research Advances Enabled by HeLa Cells*, n.d.).

Launching Virology: In the 1950's, scientists were just beginning to understand how viruses work. Henrietta's HeLa cells helped to establish the field of virology by giving scientists access to cells they could use to study how viruses enter cells and reproduce (Skloot, 2010, p. 98).

Counting Chromosomes: Until scientists had HeLa cells, they believed that human cells had a total of 48 chromosomes (Skloot, 2010, p. 100). After a scientist accidentally mixed the wrong solution with HeLa cells he found out that human cells actually had a total of 46 chromosomes. Once scientists understood how many chromosomes humans were supposed to have, they could then tell when a person had too many or too few. This discovery helped lead to the understanding that those with Down Syndrome and Klinefelter syndrome have one extra chromosome and those with Turner syndrome lacked one or part of one chromosome (Skloot, 2010, p. 100).

Standardizing Tissue Culture: One of the biggest contributions HeLa has made is the standardization of the field of tissue culture. Gey and several colleagues created a committee that developed steps to simplify tissue culturing techniques and taught biological supply companies how to replicate these new techniques. Perhaps most

dramatically, HeLa cells were the catalyst that launched the first industrial-scale, for-profit cell distribution center – a “cell factory” called Microbiological Associates (Skloot, 2010, p. 101). The standardization of the field made it possible to replicate experiments across laboratories and gave scientists the ability to advance the field. This factory fulfilled industrial orders of HeLa cells to laboratories around the world and eliminated the need for small labs that previously did this work. Microbiological Associates was the beginning of what would become the human biological materials industry. According to a study by Precedence Research, the biomaterials market was valued at \$109.4 billion in 2019 and is expected to reach a total of \$390.92 billion by the year 2027 (Precedence Research, 2020).

“The versatility and power of HeLa cells have made them an essential laboratory tool that still continue to provide new clues about the basis of human health and disease.”

(Significant Research Advances Enabled by HeLa Cells, n.d.)

Henrietta's disease, they wanted to harvest more free "product" to experiment on while failing their patient.

By harvesting Henrietta's cells and distributing them, Gey and TeLinde created the mechanism-type technology that notarized the idea that it was acceptable to take biological materials from patients without consent. During this time, it was common practice in the field of medicine, a mechanism-type technology that they have adapted to and written off as the standard of their field. This mechanism-type technology was made concrete with the creation of the larger biomedical industry that not only helped to produce the HeLa cells but also establish key functions of entire fields of study such as virology, human genetics, and tissue culture. The impact of Henrietta's cells on the biomedical industry is incalculable and this innovation created the perfect setting to introduce the commodification of biological materials.

Henrietta saw no benefit from her cells being taken. Posthumously, her family never received compensation or even an explanation for her death or the nature of her cells until a writer named Rebecca Skloot began to dig into Henrietta's history. Even Henrietta's name was safeguarded from the media by Gey and many other scientists involved in the theft of her cells. The true beneficiaries of HeLa have all been white people. Scientists like Gey and TeLinde that have been cemented in history as innovators in their fields and big business in the biomedical industry got the product they needed to start mass producing. In this instance, race was used as a technology to exert power over a young, impoverished Black woman plagued by a cancer she didn't completely understand.

Compounding: Spirometer

Technological outputs created by designers have the ability to compound. Compounding in this sense means to combine and build over the course of time. Sims' ability to utilize race as a mechanism-type technology allowed him to create myths about Black pain which were later utilized by TeLinde and Gey who perpetuated the mechanism-type technology that says it was appropriate to take parts of patients without consent. Zurara's technification of race leads to Sims' cruelty in the 1830's and allows for events like Henrietta to happen in the 1950's. The prospect of innovation in the name of progress pushes designers to iterate on technologies of the past in the name of the future.

“The way we engineer the material world reflects and reinforces (but could also be used to subvert) social hierarchies.” (Benjamin, 2019, p. 92)

The speculum and HeLa cells reinforce the power that these white, male designers had over Black women. As a result, the products that they created reflect the social hierarchies of the time. This also means race-based logics have the potential to make their way into the design of products.

In “Race After Technology,” Ruha Benjamin explains how pulmonologists adapted so heavily to the belief that lung function and capacity differed based on race, a literal “race” button was designed for the spirometer – a device that measures the amount air lungs can intake. Drawing upon the widely accepted practice of “race correction” this button made it incredibly difficult for Black people to get workers compensation and

vastly limited the number of disability claims based on the idea that Black people had different lung capacity (Benjamin, 2019, p. 154).



Figure 14. Spirometer. n.d. photograph.

This is an image of a spirometer from roughly the 1960's. Just below the small screen on the device, you can see buttons to indicate race, sex, age, and height.

Navigating the Present

In the era of digital products, the “material” things that we design have a much larger meaning. Designers – of various types – have worked to blend these two realms with the goal of creating a highly integrated society that exists both on and offline. Products such as the Internet of things (IOT), virtual reality (VR), and augmented Reality (AR) all exist

as products that can be utilized to combine the two worlds into a singular experience.

Other products have started to combine physical and digital with the use of more covert technologies and tactics. In this muddled existence, it is important that these new inventions do not escape deep, critical examination and critique.

Entrepreneurial Designer: Angela Benton of Streamlytics - 2020's

In April 2019, a new platform called Clture made the promise of democratizing data access for its consumers. The goal of the product is to democratize data and to become “the future of data transfer between services and individuals” (Startengine, n.d.). The premise of the service is to allow their target market – Black people in America – to get paid for their data. According to their website “Data is the currency of the future” and Black people’s online activity “is single-handedly responsible for building some of the largest tech companies in the world” (Clture.io, 2020). Clture is a subsidiary of a larger organization called Streamlytics. Streamlytics proclaims to be the future of data transactions by using their Business to Consumer (B2C) products to help Black users gain ownership of their data while also giving them the opportunity to make money from it. Their goal is to “empower users to get access to and truly understand the value of their own data and participate in the resulting profit” (Startengine, n.d.). The basic premise of the company is that large organizations that use data to inform market decisions will pay Streamlytics for access to Black data. Streamlytics will then package that data in their proprietary data file type called UDIF (Universal Data Interchange Format) and send their user’s information off to big businesses after the user has consented to the exchange.

Data is the currency of the future.

Black consumers stream more content than all other consumers. And time (and views) is MONEY. Your data and online activity is single-handedly responsible for building some of the largest companies in the world.

[LEARN MORE](#)

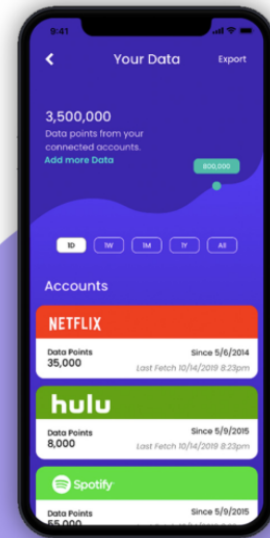


Figure 15. Screenshot from Clture.com. n.d. Screenshot.

A screenshot from the Clture website explains that Black consumers build companies with their data.

According to Streamlytics, the main problem lies with Big Tech. In their eyes, these large companies are making billions of dollars from the public's data often without the consumer's knowledge. With developments in the Data-Driven Marketing Economy and advanced artificial intelligence, the big companies continue to make money with little to no regulation without users being compensated for the use of their data. Their solution, Clture, promotes the concept of ethical data transactions and aims to put the power back in the hands of the user by giving them the rights to their own data. (Startengine, n.d.). The concept is mutually beneficial, companies get the data they want "ethically" while users get paid for their data that is currently being collected without much regulation or transparency. By charging their clients an annual subscription fee of anywhere between \$60,000 and \$120,000 per year to access the data connected to their platforms, they essentially play gatekeepers to data coming from Black consumers (Startengine, n.d.).

Streamlytics aims to change the entire data landscape. With their proprietary technologies, pricing algorithm, and data file format they believe they can change the future of data (Startengine, n.d.). Because they work for both businesses and consumers, the richer data sets that they ethically source set them apart from the very few competitors in this space. They believe the Data-Driven Marketing Economy will continue to grow as companies continue to adopt AI practices. Valued at \$20 million, Streamlytics estimates their Total Addressable Market (TAM) to be \$1.3 Trillion based on the growth in Data-Driven Marketing, AI, and streaming companies. As of September 23, 2020, Steamlytics had raised \$1,069,794 on StartEngine, a platform that allows everyday people to invest in new startups.

Streamlytics is owned by serial entrepreneur and former IAC Executive Angela Benton. As an entrepreneur, Benton has received numerous accolades including *Fast Company's* Most Influential Women in Technology and Business Insiders' 25 Most Influential African-Americans in Technology. In an interview on the Karen Hunter Show, Benton describes what she envisions the future of Streamlytics to be. For Benton, there is a place for monetizing data in the future, however, the main goal of Streamlytics is to power the future of what Steamlytics defines as ethical data transactions between consumers and businesses. Twenty to thirty years from now, she imagines a future where data set files are a relic of the past and data is shared between consumers and businesses electronically. This does not negate the fact that she believes that people need to own their data and get paid for it, however, her goal for the company is to build a data standard, perhaps *the* data standard, for the future.

Designing Fair Trade Data

In their product positioning for Clture, Steamlytics notes that Black people are building large companies with their data and should be paid for it. Owned by Black female veteran tech giant Angela Benton, Steamlytics appears to prioritize Black people in a way that they do not often experience in the technological landscape. A product built “for us by us” has the allure of a platform that doesn’t require that Black people to carve out a section of an experience or create a new, separate experience. For the Black user, getting paid for digital data might sound tantalizing and perhaps even empowering, however, what Clture is truly offering is the opportunity to have Black data to be commodified and sold to large technology companies.

While Streamlytics and its progeny Clture are new, the commodification of Black people and Black culture – as we have learned – is not. This time, however, the commodification is digital. African and Black Americans have been contributing to American culture since they were trafficked from their home countries to this supposed land of the free. In the qualitative study, *Sharecropping Blackness: White Supremacy and the Hyper-consumption of Black Popular Culture*, Nyambura Njee posits that Black culture and Blackness is constructed and commodified for the specific purpose of consumption of white people and is intricately related to maintaining white supremacy and the systematic oppression of Black people in America (Njee, 2016, p. 2).

“The process of commodification is not simply about selling an essentialized Black culture, but rather a particular construction of Blackness that has proven beneficial to White[s]” (Njee, 2016, p. 1)

African and Black Americans have long been part of the landscape of popular culture in the United States. Despite the length of history, many of the contributions Black people have made to pop culture have rendered them invisible while their contributions thrive on. With white people as the more historically dominant group in this country, Black people have had little to no control over images of Black people that are consumed historically or contemporarily. These images often have deep-seated histories that date back to slavery and present Blackness – or what white people understand to be Blackness – from the perspective of the white imagination (hooks, 1992). “Spectacular Consumption” is a process through which the relations among cultural forms, the culture industry, and the lived experience of persons are shaped by public consumption. (Watts & Orbe, 2002, p. 1)

In the era of new digital media, this consumption is pervasive and much harder to pinpoint intertwined with newfound technologies. Navigating the color-blind rhetoric that suggests the increased consumption of Blackness is equivalent to general acceptance of Black people, however, white people do not consider this consumption a call to action to unlearn racism or adopt anti-racist practices (hooks, 1992, p. 17). It is important to understand the programmatic and technological side of this kind of consumption. Even with the popularity of Blackness and Black culture, Black people continuously lose their

lives to systemic anti-blackness and lead socially limited lives in carceral systems. In the iPhone era, our lives are controlled by devices that continuously collect data on just about every aspect of our lives, from small, micro-interactions like shares and likes to real-world data points that reveal our locations and credit card numbers.

“Although rhetoric of the information age broadly seeks to disembodiment users, or at least minimize the hegemonic backdrop of the technological revolution, African Americans have embraced, modified, and contextualized technology into significantly different frameworks despite the relations of power expressed in the socio-algorithms.” (Noble, 2018, p. 171)

Diagram: The Technological Forecasting Framework in the case of Angela Benton

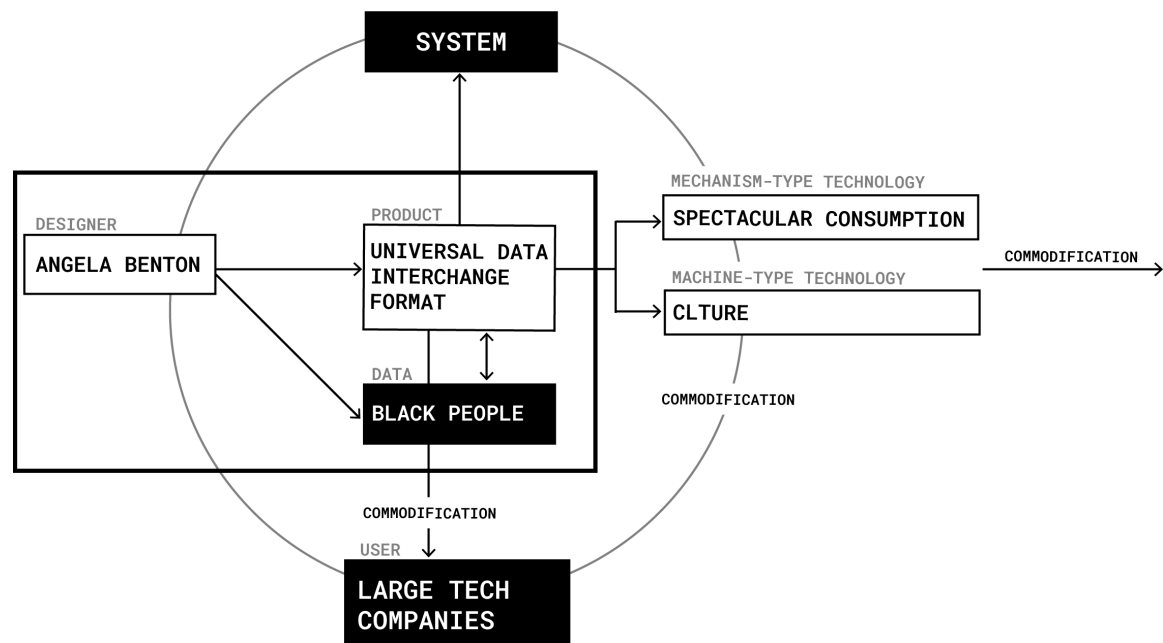


Figure 16. Leslie Genét Harris. The Technological Forecasting Framework for Angela Benton. 2021. Digital Rendering.

This diagram explains Angela Benton’s role as the designer, the product created, and the technological outputs as a result.

In the case of Clture, Angela Benton is an entrepreneurial designer behind the scenes pulling the strings to create a product that commodifies Black data to sell it. While many might point to the Black users as the beneficiaries of Clture because they are paid for their data, the true winners are the large technology companies that purchase this data from Steamlytics to gain insight about Black consumption. Black people have been pioneers of popular culture for generations. With the help of their data, companies can get ahead of trends and create offerings to their consumers based on what Black people have decided is the next big thing. Clture is a spectacular consumption machine and a technological illustration of “eating the other,” a concept coined by bell hooks. (hooks, 1992, p. 21). Eating the other is the commodification and exploitation of Otherness or cultural difference by white supremacist capitalist patriarchy. Racial differences are commodified and packaged as the flavor that enhances the white appetite while the group deemed “other” is commodified, consumed, eaten, and forgotten. Put simply, “eating the other” is the tendency for white people to bask in racialized “others” as a source of pleasure and entertainment without challenging the underlying structural inequalities that exist for those that have been othered.

“Within commodity culture, ethnicity becomes spice, seasoning that can liven up the dull dish that is mainstream white culture” (hooks, 1992, p. 21)

Legislative Designer: Karen Bass

Between 2013 and 2019, police in the United States killed 7,666 people (Haddad, 2020). These killings disproportionately affect Black Americans who are 2.5 times more likely to be killed by police than white Americans despite the fact that Black Americans only

make up 13% of the population in the U.S (Haddad, 2020). For Black Americans, being murdered by the police is a common, unavoidable occurrence that threatens their lives every day. On May 25, 2020, George Floyd – a Black resident of Minneapolis, Minnesota – was murdered by a police officer after the officer forcefully put his knee on Floyd’s neck. The murder of George Floyd sent shockwaves through the globe as it came on the heels of police murdering Breonna Taylor – a Black woman who was murdered sleeping in her bed after police conducted a no-knock search at the wrong house. People protested in all 50 states and in many countries globally to decry the state sanctioned violence against Black people in the United States and abroad (Haseman et al., 2020). In the midst of the COVID-19 global pandemic that was ravaging the globe, the United States was also forced to have a moment of reckoning surrounding racial justice. In the year following Floyd’s murder, companies, organizations, and even governments, pledged to make changes to not only acknowledge the differences in policing for Black people but also to work to reform policing as a whole. On June 8, 2020, Karen Bass (D-CA), Congresswoman and chairperson for the Congressional Black Caucus, introduced the George Floyd Justice in Policing Act otherwise known as H.R.7120 (*H.R.7120 - George Floyd Justice in Policing Act of 2020*, 2021). The following is a summary of the act:

H.R.7120 — 116th Congress (2019-2020)

“This bill addresses a wide range of policies and issues regarding policing practices and law enforcement accountability. It increases accountability for law enforcement misconduct, restricts the use of certain policing practices, enhances transparency and data collection, and establishes best practices and training requirements.

The bill enhances existing enforcement mechanisms to remedy violations by law enforcement. Among other things, it does the following:

- lowers the criminal intent standard-from willful to knowing or reckless-to convict a law enforcement officer for misconduct in a federal prosecution,
- limits qualified immunity as a defense to liability in a private civil action against a law enforcement officer, and
- grants administrative subpoena power to the Department of Justice (DOJ) in pattern-or-practice investigations.

It establishes a framework to prevent and remedy racial profiling by law enforcement at the federal, state, and local levels. It also limits the unnecessary use of force and restricts the use of no-knock warrants, chokeholds, and carotid holds.

The bill creates a national registry -the National Police Misconduct Registry- to compile data on complaints and records of police misconduct. It also establishes new reporting requirements, including on the use of force, officer misconduct, and routine policing practices (e.g., stops and searches).

Finally, it directs DOJ to create uniform accreditation standards for law enforcement agencies and requires law enforcement officers to complete training on racial profiling, implicit bias, and the duty to intervene when another officer uses excessive force.” (116th Congress, 2020) (*H.R. 7120 - George Floyd Justice in Policing Act of 2020*, 2021)

Policing Reform

Black Americans have been complaining about unwarranted state sanctioned violence from police across the nation for generations with little to no changes in the way police

forces function in the United States. George Floyd's murder was recorded. For a total of nine minutes and twenty-nine seconds, Darnella Frazier – a then 17-year-old Black girl escorting her 9-year-old cousin to the store – recorded Floyd's murder on her cell phone and uploaded it to Facebook (McDonnell Nieto del Rio, 2021). Floyd's murder was not the first time the murder of a Black person by the hands of the police was recorded but it was the first time where people saw the slow and painful murder of an innocent man so clearly. Floyd became a modern Emmett Till as his body was paraded across social media in perfect 4K resolution – giving legislators the opportunity to introduce a policing reform bill that simply could not be ignored. Many voices – from politicians to celebrities – have been urging legislators to pass H.R.7120 as it moves from the House to the Senate. For some, this kind of reform sounds like a good and welcome change that will center justice and equity for Black Americans seeking protection from police. However, this kind of innovation in the form of legislation is an opportunity for legislators to define the meaning of “reform.”

While communities affected most by police are asking for reform in the form of abolishment, the removal of surveillance devices, and specialized services, this bill aims to refurbish guidelines that are already in place but ignored. One of the biggest debates in this bill surrounds chokeholds like the ones used on George Floyd. The bill promises to use federal funding to ban chokeholds for state and local police except in moments when deadly force has been authorized (Zhou, 2021). In 2020, however, NPR found that bans on chokeholds are mostly ineffective in stopping them (King, 2020). There are two types of neck restraints that police forces use – chokehold and strongholds. Chokeholds cut off

breathing by applying direct pressure to the windpipe. Strangleholds, on the other hand, stop the flow of blood to the brain making a person go unconscious. Most large police departments don't allow chokeholds. The New York Police Department, for example, has had a ban on chokeholds for thirty years. Even still Eric Garner – another unarmed Black man – was strangled to death by the NYPD for selling cigarettes. While many communities call for the total abolition of police, H.R.7120 promises restructuring the way police work. Instead of holistically redesigning policing, they're simply giving it a fresh coat of paint by rebranding their policies – many of which have already been in place for decades. Hypervisibility is the plight of the Black Americans – visible when they can be utilized as a tool but completely invisible in matters that involve helping them.

“Enough. We can't reform the police. The only way to diminish police violence is to reduce contact between the public and the police.” (Kaba, 2020)

On April 20, 2021, the officer charged in the murder of Floyd was found guilty on three charges – second-degree unintentional murder, third-degree murder, and second-degree manslaughter. This was an unexpected result in a country that prioritizes and protects police officers more than the victims they murder. The decision was bittersweet, however. Within 24 hours of the verdict, 16-year-old Ma'Khia Bryant – a Black girl living in Columbus, Ohio – was murdered by a police officer after she called the police for help after a group of adult women attempted to fight her in her neighborhood (Durkin

Richer & Whitehurst, 2021). Even with this small win of accountability, there was immediate proof that the verdict didn't truly change anything.

As of today May 25th, 2021, the police have killed 1,068 Black people since Floyd's murder on May 25, 2020 (Haddad, 2021).

Diagram: The Technological Forecasting Framework in the case of Karen Bass

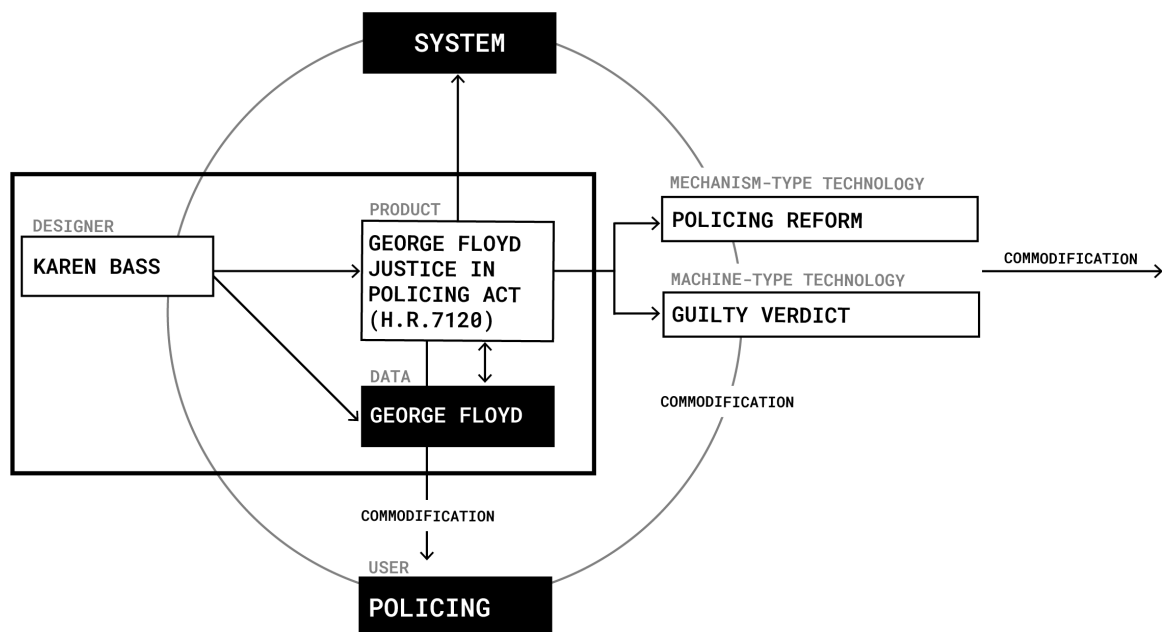


Figure 17. Leslie Genét Harris. The Technological Forecasting Framework for Karen Bass. 2021. Digital Rendering.
This diagram explains Karen Bass' role as the designer, the product created, and the technological outputs as a result.

Karen Bass and her cosponsors that drafted this new act exist as legislative designers shaping and forming the laws of this country. While their product H.R.7120 appears to be a big welcome change to the way public safety is structured in the U.S., it really works to refurbish ineffective laws and policies that are already in place instead of rectifying them.

This sort of action creates a mechanism-type technology around what reform can look like for policing in the United States. For community organizers, abolishment of the police is the only worthy reform but bills like H.R.7120 are put in place to feign action and change when in reality they are meant to commoditize the name of a man murdered by a police state to maintain a mildly different status quo. In the end, these kinds of bills work to serve whiteness in the form of policing as it protects police from any true consequences while simultaneously feeling like progress when it is truly a bill advocating stagnation.

Expanding: Shudu Gram

George Floyd's murder and the George Floyd Policing Act shows that Black people and Blackness itself can be commoditized even posthumously. In fact – the Black body can be commoditized even if it has never been alive in the first place. Technological outputs created by designers have the ability to expand. To expand in this exploration means to increase the use and scope in both physical and digital spaces. Shudu Gram, an Instagram influencer, is a computer-generated character created by former fashion photographer Cameron-James Wilson. Created in 2017, Shudu is the world's first digital supermodel (Marain & Green, 2019). Shudu has been in ad campaigns for huge brands including Lexus, Michelob, and Samsung and even made a name amongst high fashion brands such as Ferragamo and Christian Louboutin. Wilson, a white man, views the Instagram account and his character Shudu as a celebration of Blackness and Black women. Many others have had much more critical responses – mainly because they didn't know it was a computer-generated character. For them, creating a computer-generated character in the likeness of Black women is a scapegoat in a modeling industry that is 78.2% white (Elan,

2016). For Black models, Shudu exists as a threat to their livelihood but also as a point of contention around equity in a space that wasn't built for them to thrive in. Writer Bolu Babalola criticized the creation saying that Shudu was:

“...contrived by a white man who has noticed the ‘movement’ of dark-skinned women.” - Bolu Babalola (Jackson, 2018)

Technological solutions have the ability to expand the way race is used as a tool to benefit whiteness and the white supremacist capitalist patriarchy. Innovation in the name of progress makes racism hard to pinpoint as it changes over time.

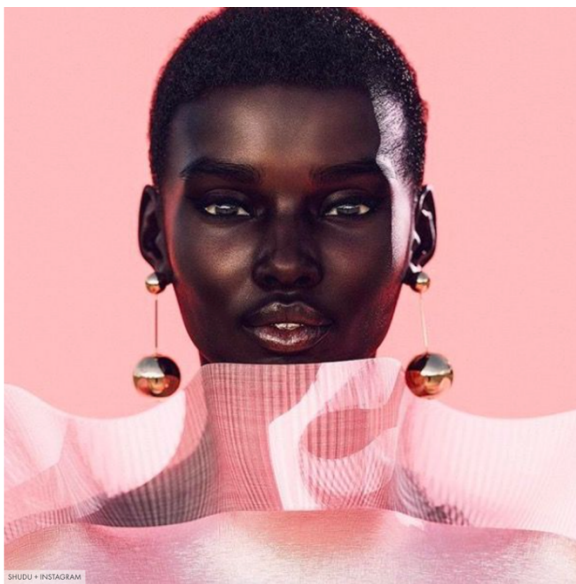


Figure 18. Shudu Gram. n.d. Digital Rendering. Shudu Gram is a 3D rendering of a Black woman.

Conclusion

The case studies presented show that designers can exist as doctors, scientists, entrepreneurs, legislators, and even artists. These people have the power and agency to make decisions that shape the world we live in even without the title “Designer.” The technologies that products manufacture compound and combine over time and expand into new digital products. As designers of any sort create new products it is imperative that they consider the nuances of assumptions, biases, justice, social hierarchies, and conditions or technologies – both machine and mechanism – that we all subconsciously partake in.

VI. CASE STUDY FOR THE FUTURE

Designing for the Future

Design is in the business of future-making – to design is to create a potential future. Every act of design is an act of attempting to define one of the many potential futures by suggesting new ideas (Fuller, 2020). The design thinking frameworks like human-centered design – with its various steps and methodologies – is simply a strategy and a blueprint that can streamline and aid in its progress. Designers understand and define problems, create ideas, fabricate prototypes, and test the potential solutions to understand their effectiveness in the real world all in the hopes of suggesting and then creating a potential instance of the future as defined by the designer or their client. By constructing what does not yet exist, design in many ways is about dreaming up a future.

“Design attempts to script the future by projecting its desires (and those of others) forward in time.” (“Defuturing the Image of the Future,” 2020, p. 3)

Design’s current inclination to always create for the future is not solely due to its ability to create what doesn't exist based on ideas – this ethos is part of design’s history. After the year 1900, the word “design” truthfully meant “designing for the future” (“Defuturing the Image of the Future,” 2020, p. 4). During this time at the beginning of the 20th century, we see a deep rejection of the past in favor of the future with the Modernist movement. Visions of the past were framed as primitive and less evolved then pitted against images of the future to help sell ideas about the allure of possible futures. World-renowned Spanish painter Pablo Picasso is known as one of the premier artists to come

out of this era. During what is called his “African Period” or the Negro Period, Picasso was “inspired” by African masks and sculpture to create a style now known as cubism. Cubism is regarded as the most influential art movement of the 20th century (*Cubism: The Leonard A. Lauder Collection*, n.d.). Cubism’s shift from Victorian ornamentation of the past centuries to abstraction changed the entire course of history for both painting and graphic design. Progress, in this case, was inspired by African artisans but it certainly did not include them.

Case Study: The Future - Yona

In 2016, designers at frog, a global design and consulting firm, worked to redesign the clinical pelvic exam for people with vaginas. Using human-centered methodologies, the designers and engineers on this project aimed “to understand how the exam experience can be improved through industrial and interaction design for both patient and provider” by creating a new speculum named Yona (Hiznay, 2018). In the development of Yona, the team made sure to conduct interviews with patients and OB/GYN’s to understand the exam experience from both sides. They also made sure they considered the LGBTQ+ community in the hopes of creating the most inclusive experience possible. While the main artifact of the project was the Yona speculum, this team also worked to define and design the entire experience of the pelvic exam and reimagined the various touch points both patients and providers might encounter in the process. This includes an app where patients can ask questions, learn about the exam before they’re in the room, and set personal preferences about the room set up. There’s also an opportunity to purchase a comfort kit that includes a weighted blanket and a stress ball for the most comfortable experience in the exam room. Once a patient gets to the room, small adjustments to the

environment have been made to make patients feel less anxious about the process. This includes a hanger to put your clothes on instead of piling them on top of the patient chair and exam table covers with catchy copywriting to ease tension. Finally, when the patient settles in, the app offers guided meditations while they wait for the doctor to meet them. In consideration of queer patients, Yona uses a gender-neutral brand character and pronouns on its app, website, and social media to ensure everyone feels not only welcome but fully invited to the exam table.



Figure 19. Frog's Speculum Yona, 2016-2019. Photograph.
A prototype of frog's speculum.

Default Discrimination

Yona is a case study that exemplifies the characteristics of default discrimination in the New Jim Code. As a reminder, default discrimination describes what happens when

designers do not consider the historical and social conditions in their design processes and outputs. Yona reflects the priorities and concerns of the designers that defined the problem. Even though the intentions of the designers were to create a new product that improved the pelvic exam experience for both the patient and the doctors, they completely ignore the long historical context that the speculum carries. J. Marion Sims' experiments on Black women gave him the resources he needed to build the first iteration of the speculum. The long-lasting harm that he created during this process is still felt today and yet in the redesign of the speculum in this project, none of that context is surfaced or even mentioned in the final case study. In a press release about the project, frog mentions the speculum's design has been untouched for generations, but they fail to explain how it even came to exist:

"The speculum, which is the medical device used for examining bodily orifices and the primary device in a pelvic exam, has remained largely unchanged since its development 200 years ago. Many patients view the speculum as cold and invasive, also signifying a dreaded moment of the examination." (Hiznay, 2018)

Hailey Stewart, lead Industrial designer on the project was quoted saying, "We recognized the need for a humanized pelvic exam experience that empowers patients... Our research showed us that many people with vaginas feel anxious about pelvic exams, which is no help to their health. Through Yona, we wanted to create a conversation and highlight that it is possible to balance human needs with clinical needs in the pelvic exam setting" (Hiznay, 2018). If only Lucy, Betsy, and Anarcha's humanity had had the opportunity to have a "humanizing pelvic exam." While the designers claimed to have used "radical empathy" in the process of their exploration, this empathy was not extended

to the women that were utilized as literal test subjects to give them the very prototype device that they continued to iterate on.

This design team also made note of their concerted and very specific effort to create a product that was mindful of the LGBTQ+ community. The team used a research method called radical empathy to help people who have never had a pelvic exam gain empathy and an understanding of the procedure. In a five-and-a-half-minute video, these people shared their thoughts about the pelvic exam and were asked to read stories the team had collected during their discovery process. What is most interesting about this video, however, is the usage of the words “men” and “women.” While Yona claims to be inclusive of those in the LGBTQ+ community in their app, they do not maintain that same level of consideration and care in their research artifacts and use binary gender constructs in a moment they promised to be comprehensive of all gender identities.

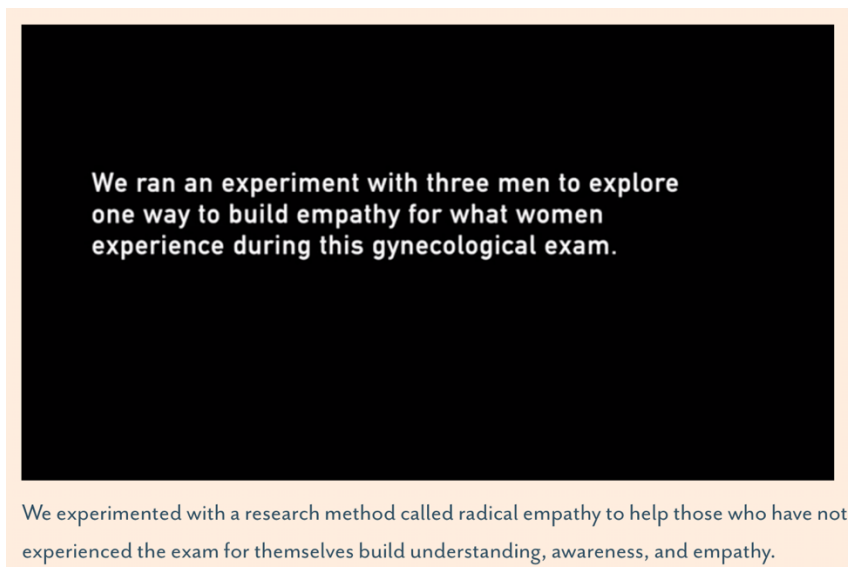


Figure 20. Yona Radical Empathy Experiment Video. n.d. Screenshot.
Frog’s research artifacts do not match their commitment to honoring all genders.

Diagram: The Technological Forecasting Framework in the case of frog

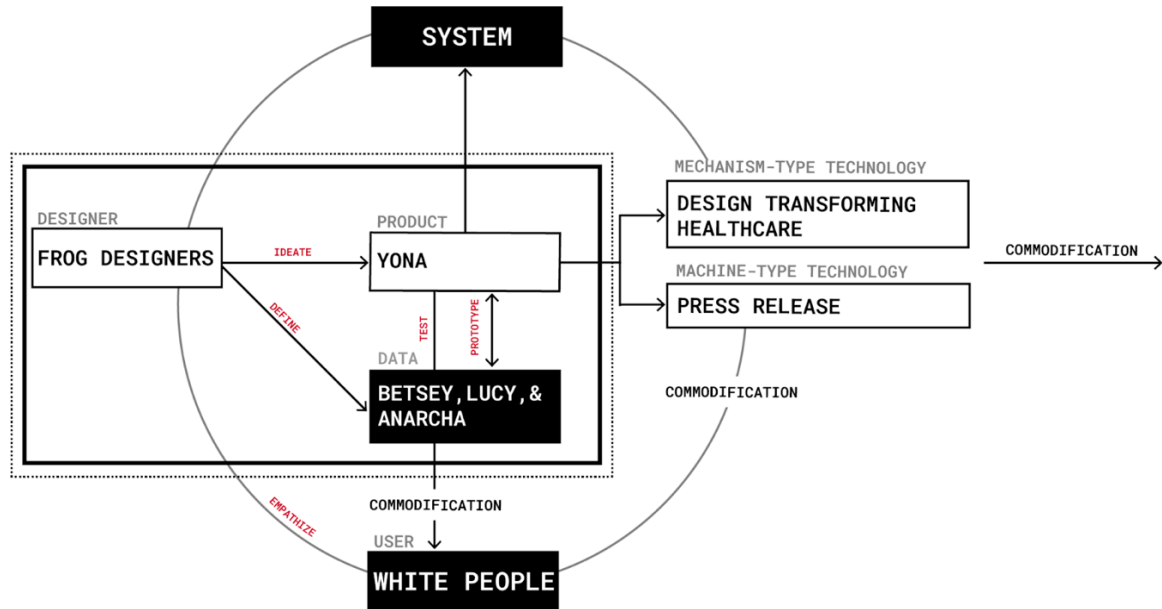


Figure 21. Leslie Genét Harris. The Technological Forecasting Framework for frog design. 2021. Digital Rendering.

This diagram explains frog's designers, the product created, and the technological outputs as a result.

By using human-centered design methodologies, the team at frog designed a product that seemingly revolutionizes the way that we think about the speculum and the pelvic exam. In reality, they profited off of the exploitation of enslaved Black women by iterating upon the work of a man that believed that these women were nothing more than materials for his experiments. In turn, this project created a mechanism-type technology that perpetuates the idea that design can reshape and advance healthcare with the help of design thinking frameworks. For giant, international consulting companies like frog, case studies like this project not only act as a marketing tool to attract new clients but it also gives them more opportunities to create similar work. The following quote is from a press release about the project:

“There is such phenomenal potential for design to transform Healthcare. We’re honored to partner with health and wellness organizations across the globe in service of delivering more human-centered, effective and accessible care to everyone in the care community...frog is full of passionate designers, technologists and strategists who use their collective talent to create solutions that make a real difference in people’s lives. We encourage our people to follow ‘passion projects,’ which is how Yona came to be.” - Lindsey Mosby, Vice President of frogHealth, (Hiznay, 2018)

In the words of Ruha Benjamin, “the fantasy of some is a nightmare of others and that embodiment does not magically cease to matter with automation, but can actually become more intensified, intrusive and violent.” 2019 (*Ruha Benjamin on "The New Jim Code? Race, Carceral Technoscience, and Liberatory Imagination"*, 2019)

Conclusion

With the introduction of design thinking frameworks such as human-centered design, designers create distractions disguised as solutions. This is done in two major ways: scoping projects to their understanding of the problem which usually results in complete denial of the deeply rooted complexity of issues at play and using the power granted to the person in the position of the designer to make the final decision about a solution.

Many of the issues we face today cannot be fixed without challenging and changing defined behaviors and values as a society. Technologies, with the help of designers, can compound and expand across time by using innovation as a marker for progress in the name of capitalism. As one looks to the future, it is easy to spot signals that point to new

innovations that will further entangle our understanding of advancement. As we can see from these connected case studies, creations of the past always linger in the future:

“We need to remind ourselves that the future is never empty, never a blank space to be filled with the output of human activity. It is already colonised by what the past and present have sent to it. Without this comprehension, without an understanding of what is finite, what limits reign and what directions are already set in place, we have little knowledge of futures, either of those we need to destroy or those we need to create.”

Tony Fry quoted in (“Defuturing the Image of the Future,” 2020, p. 5)

VII. CONCLUSION

Post-raciality

In the era of new digital media, the consumption of Black people and Blackness is camouflaged and coded into new products making the exploitation even harder to pinpoint. Digital solutions cannot be a cure-all for social conditions if the designers spearheading the project scope problems to their understanding of the issue without understanding the complete social and historical context. Mainstream design and design thinking frameworks do not exist for social progress but rather for the continued progress and growth of private enterprise because it relies on their capital to exist (Kramer et al., 2016, p. 5).

“Design, conceived as a politically agnostic technical discipline concerned with the (in)efficiencies of systems, cannot solve problems generated by the larger political contexts in which it operates. In fact, such design interventions risk perpetuating rather than challenging the power dynamics at the root of the social issue it is deployed to address.” (Kramer et al., 2016, p. 5)

Whether we are cognizant of it or not, racial logics install themselves into design practices and open Black people up to being used as data points for white consumption in. The color-blind rhetoric suggests the increased consumption of Blackness is equivalent to general acceptance of Black people (Njee, 2016, p. 2). In this is a technological form of “eating the other,” a concept coined by author bell hooks. Black people are used as data points to inform products and services that are supposed to

benefit them while they lose their lives to systemic anti-black racism (hooks, 1992, 21).

Eating the other is the commodification and exploitation of Otherness or cultural difference by white supremacist capitalist patriarchy. Racial differences are commodified and packaged as the flavor that enhances the white appetite while the group deemed “other” is commodified, consumed, eaten, and forgotten.

“Within commodity culture, ethnicity becomes spice, seasoning that can liven up the dull dish that is mainstream white culture.” (hooks, 1992, 21)

Even if those in the position of the designer is Black – like Angela Benton of Steamlytics or Congresswoman Karen Bass drafting the George Floyd Policing Act – no one is exempt from participating in the system that is white supremacist capitalist patriarchy.

“Can a community whose past has been deliberately rubbed out, and whose energies have subsequently been consumed by the search for legible traces of its history, imagine possible futures? Furthermore, isn’t the unreal estate of the future already owned by the technocrats, futurologists, streamliners, and set designers—white to a man—who have engineered our collective fantasies? The ‘semiotic ghosts’ of Fritz Lang’s *Metropolis*, Frank R. Paul’s illustrations for Hugo Gernsback’s *Amazing Stories*, the chromium-skinned, teardrop-shaped household appliances dreamed up by Raymond Loewy and Henry Dreyfuss, Norman Bel Geddes’s Futurama at the 1939 New York World’s Fair, and Disney’s Tomorrowland still haunt the public imagination, in one capitalist, consumerist guise or another.” (Dery, 1994, p. 180)

Imagination is a Field

Future-making is fickle and as designers work to create futures as they imagine them, these futures are not always inclusive of everyone or everything that exists in our present and past. To paraphrase thoughts by Claudia Rankine, “The most dangerous place for Black people to live is in white people’s imaginations” (Yang, 2018). Societal norms, values, assumptions, and biases all exist before any one project has even been designed. This means it is not simply the products designers make that cause these outputs but the social codes already ingrained in the fabric of society. The hunger for innovation can make these updates seem like desirable steps towards progress – and sometimes for underserved and historically marginalized groups – like justice. Design that is decoupled from commercialization and dedicated to thinking, challenging the status quo, and reflecting could be a new form of design that removes itself from industry and centers radical imagination:

“Imagination is a contested field of action, not an ephemeral afterthought that we have the luxury to dismiss or romanticize, but a resource, a battleground, an input and output of technology and social order. In fact, we should acknowledge that most people are forced to live inside someone else's imagination and one of the things we have to come to grips with is how the nightmares that many people are forced to endure are the underside of elite fantasies about efficiency, profit, and social control. Racism among other axes of domination helps produce this fragmented imagination, misery for some, monopoly for others. This means that for those of us who want to construct a different social reality, one grounded in justice and joy, we can't only critique the underside but we also have to

wrestle with the deep investments, the desire even for social domination.” (*Ruha Benjamin on "The New Jim Code? Race, Carceral Technoscience, and Liberatory Imagination"*, 2019)

Instead of abandoning the practice altogether, many have used design to speculate how things *could* be both in the present and the future (Dunne & Raby, 2013, p. 2).

Speculative Design “thrives on imagination and aims to open up new perspectives on what are sometimes called wicked problems, to create spaces for discussion and debate about alternative ways of being, and to inspire and encourage people’s imaginations to flow freely” (Dunne & Raby, 2013, p. 2). Speculative Design aims to unsettle, question, and redefine our relationship with our present – shifting design to be a discussion about implication instead of application. This is not an exercise in predicting the future but rather an opportunity to imagine potential futures to create conversation and discourse about the present:

“To find inspiration for speculating through design we need to look beyond design to the methodological playgrounds of cinema, literature, science, ethics, politics, and art; to explore hybridize, borrow, and embrace the many tools available for crafting not only things but also ideas – fictional worlds, cautionary tales, what-if scenarios, thought experiments, counterfactuals, reductio ad absurdum experiments, prefigurative futures, and so on.” (Dunne & Raby, 2013, p. 3)

Design is The Master's Tools

In her 1984 essay “The Master’s Tools Will Never Dismantle the Master’s House”, Audre Lord uses the master’s house as the central metaphor to describe power as a means to critique white feminists over their handling of an academic conference at the New York University Institute for Humanities. In her criticism of these white feminists, Lorde offers a new, straightforward way of thinking about how progress is made. To Lorde, we cannot disrupt our oppression by using the very same logic that our oppressors use to denigrate us. This kind of progress offers results that may feel progressive but they ultimately lack the substantial change needed to effect any true systemic change.

Commoditization of Black data in its various forms is not a new phenomenon. While scientists, doctors, lawmakers and – generally speaking – wealthy, white, straight men were the harvesters of the past, technologists, engineers, and designers exist as the new players of the same game. The tools of the master have been rebranded, redeveloped, and repackaged with the help of design thinking as a creative cure-all that can solve the most dynamic problems humanity faces. As designers create work for communities, they must interrogate their frameworks and practices to create a more equitable design:

They warn that “without first considering processes, methodologies, frameworks, ethics, and foundations for the field, the freedom and dynamism currently present within social design weaken the legitimacy and potential efficacy of the field” and “can and [do] contribute to causing harm and negatively impacting populations in an attempt to make social change.” (Julia et al., 2016, p. 5)

Conclusion

While racism changes its shape and strategy to meet its needs in any moment, it always has familiar, ugly remnants that betray its covert performance. It is vital in moments of what seems to be inevitable progress and success that designers, thinkers, and makers question this heralded innovation and use critical thinking to understand its true complexity. White supremacist capitalist patriarchy exists as a system that spans across time. Its existence is a team effort, however, that requires designers of various specializations to exist as maintainers by creating products that aim to sustain it. Commercial design and racism work in the same way in that they're contingent and predicated upon the time in which they exist. In order to stay relevant, their function and utility must be reimagined and innovated. Design and its coveted design thinking frameworks like human-centered design are products of white supremacist capitalist patriarchy that hopes to colonize us while telling us it is "progress."

"...racism is productive, not in the sense of being good, but in the literal capacity of racism to produce things of value to some, even as it wreaks havoc on others."- Ruha Benjamin (*Ruha Benjamin on "The New Jim Code? Race, Carceral Technoscience, and Liberatory Imagination"*, 2019)

Design thinking and HCD have been used across multiple sectors of businesses as a creative strategy to make creative, solution-driven outputs. Because of HCD's focus on the needs of humans with the utilization of empathy, the framework has been identified

as a tool to be used for social progress. Adoption of design thinking frameworks is due in part to the numerous case studies available from global agencies, consultancies, and the like that explain the validity and perceived success of the methodologies that the framework outlines (Julia et al., 2016, p. 4). Despite these endorsements, design has still not standardized methodologies that truly solve wicked problems completely and holistically. When one attempts to design for all humans it is critical to understand *which* humans are being prioritized (Benjamin, 2019, p. 174). While human-centered design declares that it aims to solve for humans, it never defines who it considers to be human. For Black people, a group that was once literally considered to be property in this country, this means design as a practice and design thinking as a framework are used as props to persuade communities that design can be used as a tool to help their communities while simultaneously collecting their data for white consumption and commodification. With my proposed framework, I exemplify how design thinking and designers as their stewards, should be understood to be branches of the larger system that is white supremacist capitalist patriarchy.

Social and technological components are intertwined even when they don't outwardly present themselves as such. As designers, it is important that we understand not only the implications of the co-mingling but how these forces may be reconfigured and reimagined when they are harmful. This thesis exists as a call to action to those designers that truly aim to uplift the most harmed communities and alter the status quo. The theoretical framework is meant to act as a guideline for designers to understand potential technological outputs of the products and services they create in the present and future.

This work exists as one of the many voices that is critical of design's methodologies, frameworks, history, and industry while simultaneously existing within it:

“For the master’s tools will never dismantle the master’s house. They may allow us temporarily to beat him at his own game, but they will never enable us to bring about genuine change.” (Lorde, 1984, p. 112)

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