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Sociotechnical Analysis of Project Green Light

What is Project Green Light?

Project Green Light is a system of cameras and the flashing green lights that mark their locations all throughout Detroit, Michigan. This program is facilitated through the city's police department and allows businesses to pay a price to have the cameras installed at their location. The cameras can be installed outside, inside, or both at participating businesses, and in return, the business gets real-time camera connections with police headquarters. In an interview from the University of Michigan with Tawana Petty, she describes the system as the following: "Project Green Light is a public-private partnership between Detroit Police Department, city government, Comcast, Guardian Alarm Company, and local businesses that allows for these businesses and institutions to pay a fee to be prioritized over residents essentially. So, they pay thousands of dollars to have surveillance cameras attached to their businesses and green lights attached to those businesses as well. They're flashing green lights that flash 24 hours a day seven days a week, so if you live next door to one of those green lights, you can imagine it's pretty pervasive, but this system allows for these businesses to be prioritized as 'priority 1' businesses if a crime happens at their institution". According to Detroit's government website, the project began on January 1st, 2016 when the Detroit Police Department partnered with eight gas stations that opted to have the system installed. As of January 1st, 2021, 733 businesses were involved in this program.(Kaye, 2021) The system has a number of features including real-time footage of an

area, the ability to record what is happening, and, of course, facial recognition software. The stakeholders impacted by this project and its features include the citizens and visitors of Detroit, the Detroit Police Department, the Detroit government and its officials, the developers that helped design and integrate the system, the businesses of Detroit (both with and without the cameras installed), and the criminals (or wrongfully accused) that the system picks up on. Interestingly, only a few of the groups listed have any amount of power or agency over this system. “Power” is the idea that one thing has the capacity to exert influence over another. “Agency” is just the idea that something “has the capacity to take action and make choices”. The groups that have power in this situation mainly include government officials, the police department, those who designed the system, and those businesses that are able to implement the system in the way that they have influence over the people that these cameras pick up on. These groups also all have agency, but there are other groups that have no power and only agency. The businesses have agency in the way that they can decide whether or not to install the cameras, and citizens have some agency in the way that they can avoid the areas with these cameras, but if you live in an area where they are present, this may not be possible.

Automated Processes

This project has essentially automated the process of how people can be accused and convicted of crimes. Tawana Petty describes how this process occurs by stating, “...with Project Green Light, there’s the capability of using facial recognition technology, so you have officers who are leveraging the footage from Project Green Light to add to a facial recognition database that is then compiled and analyzed for pursuit of criminals”. A process that would otherwise be completely controlled by human beings is now being done by computers in this case. Outwardly,

this seems like something that would be very useful, but it comes with a number of concerns. One of these concerns stems from the fact that facial recognition software can be used for more than just accusing people of crimes that are caught on the camera's footage. In an article from the New York Times about this project, the author states, "Others were more concerned with a provision that would allow the police to go beyond identifying violent crime suspects with facial recognition and allow officers to try to identify anyone for whom a 'reasonable suspicion' exists that they could provide information relevant to an active crime investigation. There was also concern that the photograph of anyone who gets a Michigan state ID or driver's license is searchable by state and local law enforcement agencies, and the F.B.I., likely without their knowledge".(Harmon, 2019) This basically means that not only has the process of accusing people for crimes been automated, but the process of just identifying people in general has also been completely automated with facial recognition and these cameras. There is some debate over how ethical this is and why the city would need to be identifying random people who are just minding their business in the first place, but the general consensus seems to be that people are a little unsettled by the capabilities of this system. According to the same New York Times article from Amy Harmon, the project has already made arrests, but the issue is that the facial recognition specifically can be very inaccurate. Taking humans out of a process that requires such detail and precision that this system is currently not able to accomplish on its own has led to some issues. For example, we humans are very good at identifying one person from another, which is exactly what a police officer's job is when they are trying to identify the perpetrator of a crime. Facial recognition software is not quite as good as a human at distinguishing one person from another, and there are some pretty severe consequences when this system's purpose is to identify people who should be convicted of crimes and put in jail.

Affordances and Limitations of Facial Recognition Algorithm

There are a number of affordances and limitations that the facial recognition algorithm in Project Green Light has to offer. The University of Michigan conducted interviews with two businesses that have opted to use Project Green Light at their locations, and one business owner, a man that goes by PJ and owns PJ's Lager House, stated, "They have been very good. They're responsive if people call from here and say 'Something's happened. I'm at a Green Light location'. They can look at it much more quickly...so thieves know that we have Green Light, know that we pay attention to it, and know that if they're familiar to the territory, and they're on film, they're much more likely to at least get arrested". From this man's point of view, Project Green Light is great because it keeps the crime away from his bar and ensures that if something does happen, he is not only given priority, but the odds are that the system will recognize exactly who committed the crime. In the case of something like a robbery or a carjacking, the identification of perpetrators could be made a lot easier when a camera with facial recognition software is present in the area, and whoever had something stolen could get their belongings back much faster. These affordances are great for those businesses that are able to afford the system, and they can be really helpful to the police department and city as a whole when the facial recognition is working correctly.

Despite how great these affordances are, they typically only happen when the facial recognition software is working exactly as it should. One of the biggest limitations of this system is that it often misidentifies people as someone they are not. In the article *Wrongfully Accused by an Algorithm*, the story of a man named Robert Julian-Borchak Williams is outlined, and the author explains how one of these cameras identified him as a man that had robbed a store. He

was taken into custody, questioned, kept in jail, and forced to go to court for a crime that he did not commit all because one of these systems wrongfully accused him. Additionally, the cameras are not all evenly distributed throughout Detroit because it is an expensive system that not every business can afford, so one area may have a better chance of the police responding to the crimes near them than another area would. The limitations of this system are ones that cause severe harm to those living in or visiting the city, and they are so harmful that they have the potential to ruin a person's future.

Black Boxes in Project Green Light

The way in which different aspects of Project Green Light work are actually black boxed processes that a number of the stakeholders involved do not have a way of understanding. One of the biggest examples of a black box in this system comes from the facial recognition software. The University of Michigan interviews are helpful in describing exactly how this feature is a black box. They did an interview with an employee of a bagel shop in Detroit named Bella. When told that there was facial recognition software in the Green Light cameras that were installed outside of the place where she works, she was obviously a little uncomfortable. She stated that she had no idea that the cameras had this capability and would be curious to know how this system works and what exactly it is doing. Many people have the same concerns. In the article *As Cameras Track Detroit's Residents, a Debate Ensues Over Racial Bias*, it is stated that the facial recognition software in these cameras is one "that can, in a matter of seconds, suggest the identity of the anonymous people captured on video", and none of people living in Detroit or working in the businesses with these cameras have any idea how the software works, what exactly it is doing with the information it is taking in about people, or when someone may be

watching and identifying them on the real-time camera feed. Only those that developed this software and perhaps the government officials that helped create this project know exactly what is happening with this data. There has been massive outcry about this according to the article from Amy Harmon since a lot of people see this use of facial recognition as an invasion of their privacy, but nothing has really changed despite concerns.

Another process that is black boxed in Project Green Light is the priority policing aspect of the system. Nobody knows exactly what process occurs when determining how one person should be prioritized over another if both are experiencing a situation that requires a police presence. We know that those businesses participating in Project Green Light receive some type of priority, but what kind of crime constitutes a faster response than some other crime is unknown. The only groups that would understand how this process works are probably the police and government officials. Ironically, the stakeholders most affected by this system, the citizens of Detroit, are the ones who know the least about how it works.

Desired and Undesired Outcomes of Project Green Light

When Project Green Light was first implemented in 2016, it was with good intention and hopes for only good outcomes. Unfortunately, this is not exactly how things have played out. The goal of this project was to make policing more efficient, reduce crime, and make Detroit a safer place. Some businesses are able to provide proof of this system working well for them much like PJ said in his interview with the University of Michigan. In his interview, he also stated that he has noticed a decreased amount of crime in the areas where more cameras have been installed, but the issue is that the installation of these cameras may not have actually been decreasing the amount of crime as a form of disciplinary architecture but instead has been acting as a form of

persuasive architecture and is moving crime to other parts of the city where the cameras are not present. Tawana Petty mentioned in her interview that crime rates are not going down. Crime is just moving to other parts of Detroit. This is one among many of the undesired outcomes from this project. As time has gone on, a number of schemas present in the city of Detroit have revealed the flaws with Project Green Light. The race, gender, and class makeup of the city have played a substantial role in how the system works, or how it does not work. Race and gender specifically are two schemas that facial recognition systems are extremely biased against. In particular, these softwares are biased against those with darker skin tones and women. This bias was explored by a woman named Joy Buolamwini, and she found that these systems misidentified those who are African American and women more than any other group.(Lohr, 2018) Inaccuracies such as these are what have caused undesirable outcomes such as people being wrongfully accused with facial recognition software. Additionally, the city of Detroit is broken up a lot by class. In discussion, we learned that it is possible to map out areas of Detroit with lower or higher income, and both groups tend to separate their residences from each other. Additionally, the city is very segregated in terms of where people live based on their race, and in discussion we found that the vast majority of Green Light Project cameras are in areas that are traditionally occupied by either mostly African American residents or mostly low income residents. As a result, these two groups are getting the brunt of these undesirable outcomes. They are the ones being wrongfully accused and losing their sense of privacy. Another undesirable outcome stems from the class schema. Only those that can afford the system get access to priority policing, so even if you do really need help, you may lose priority to someone with more money because they were able to afford the system.

The Usefulness of a Sociotechnical Approach

Technology and society work hand in hand every day, and to accurately understand the relationship between these two, it takes a certain type of analysis. In class, technological determinism was the first analytical lens discussed. This lens places all agency in the technology itself. If this lens is applied to our analysis of Project Green Light, we would understand it in a way that puts all of the responsibility on things like the facial recognition software and the cameras themselves. We would blame them fully for misidentifying or identifying people and for stopping or simply moving crime in the city of Detroit. The practice of analyzing things from this lens leaves some holes though, so our class moved to a lens called Social Construction of Technology. This lens brings society into the mix. The issue is that with this lens, all agency and power is placed on those who create and interact with the technology, or society itself. With this lens, we place all the responsibility for Project Green Light on those who create and use it such as government officials, developers, and the police. We lose sight of what the technology is actually doing in this case, so we needed a better way to understand this relationship and turned to a mutual shaping lens.

Analyzing Project Green Light using a mutual shaping lens helps us to better understand the relationship between society and the technology. With this lens we begin to see how the government officials impacted the creation of this project and how the biases of the developers created an unintended bias in the facial recognition software. We can then draw on these outcomes and see how they left an impact. As a result of these cameras being created, their presence has left people feeling like they are being watched, so people may tend to avoid the areas where they are located. Similarly, the biases in the facial recognition software that came as a result of the biases in the people who developed, have resulted in other people being accused of

crimes they didn't commit. This lens creates an endless cause and effect chain that goes back and forth between the social and technical factors at play. By analyzing the events in this chain of cause and effect, we are able to gain a better understanding of what Project Green Light is actually doing. We begin to see how the people have affected the technology involved and how these effects in turn have impacted more people.

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