An Actor-Network Theory Approach to Understanding the Orlando Police Department's Failed Pilot to Adopt Amazon's Rekognition Software into Law Enforcement Surveillance

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Introduction

In December 2017, the Orlando Police Department (OPD) began exploring the potential to integrate Amazon's facial recognition software, called Rekognition, into a surveillance system in order to promote public safety throughout the city. However, the technology faced multiple technical issues and public criticisms, and thus, the OPD was unable to continue its use past the initial pilot programs. Current scholarship in the field of law enforcement surveillance simply addresses hypothetical privacy concerns raised by the public in regard to these systems. However, no research to date has examined the actual implementation of public surveillance equipped with facial recognition technology, which would provide insight into how the resulting sociotechnical system functions as a whole. By looking at a specific case in Orlando, Florida, where the implementation of facial recognition technology failed, this analysis will provide a better understanding of how hypothetical privacy concerns play out and affect sociotechnical systems in the real world. The analysis will allow for an investigation into how various actors such as advocacy groups, corporations, the police department, the government, the public, and the technology itself can come together to cause the system to fail or succeed.

In this paper, I will argue that although technological problems were present, the underlying cause of the pilot's failure was the opposition from many advocacy groups, most notably the American Civil Liberties Union (ACLU). This opposition was incurred because the OPD prioritized resolving technical issues over considering policies to regulate the technology and because the technology gave too much power to the police department, which jeopardized the public's civil liberties. To frame my analysis, I will use Actor-Network Theory, which allows for a network, or sociotechnical system, to be analyzed by breaking it down into its various components, or actors, and assessing the relationships between them.

Background

The Orlando Police Department (OPD) entered into a pilot program with Amazon in December 2017 to assess the feasibility of using the company's facial recognition software, called Rekognition, with surveillance as a law enforcement tool. During the pilot, the OPD attempted to configure eight surveillance cameras around the city to use the Rekognition software to identify the faces of police officers who volunteered to participate, but numerous technical issues and public opposition plagued the network (City of Orlando, 2019). In July 2019, the OPD let the pilot period expire with no future plans to explore the technology, citing the fact that the city lacked the resources to dedicate toward making any noticeable progress in the configuration of the technology (Edmonds et al., 2019).

Literature Review

While several scholars have examined the implications that using facial recognition technology and general surveillance systems in law enforcement can have on individuals' civil liberties, this work has been largely theoretical and speculative in nature. In other words, scholars have not yet addressed how communities have responded to facial recognition surveillance in cases where it was actually implemented by law enforcement. Furthermore, no research has been conducted on the deployment of Amazon's facial recognition software, Rekognition, in any law enforcement application. However, much of the research that has been done on surveillance systems helps to give a better understanding of the reasons why the public might have reservations about the technology.

Finn and Wright discuss a unique application of surveillance technology – the use of unmanned aircraft systems (UASs), or drones, to surveil (Finn & Wright, 2012). Although their work does not consider the implementation of facial recognition technology, it is useful in that it

highlights several of the impacts that an intrusive surveillance system can have on privacy and civil liberties. The researchers argue that when UASs are used to prevent crime, they are disproportionately targeted towards certain demographics such as lower income groups, people of color, protesters, and groups of young people. This results in "disproportionate impacts on civil liberties for already marginalized populations" (Finn & Wright, 2012, p. 185). The researchers also claim that this type of surveillance can restrict civil liberties by restraining freedom of assembly or expression by discouraging participation in certain social gatherings or dissent activities. Furthermore, they assert that there are no existing regulatory mechanisms in place to prevent marginalized groups from being disproportionately surveilled (Finn & Wright, 2012). While this source does not address general citywide surveillance using facial recognition, its analysis of privacy concerns associated with UAS surveillance does help provide insight into why the public might be uncomfortable with similar intrusive surveillance tools, such as facial recognition.

Bromberg, Charbonneau, and Smith, on the other hand, do examine an application of facial recognition technology in law enforcement: the use of the technology in police body-worn cameras (Bromberg et al., 2020). They examined public support of this technology by conducting a survey designed to compare participants' responses when asked overtly and when given some measure of anonymity. According to their findings, participants showed significantly lower rates of support for the technology when they were given anonymity, suggesting that people may feel social pressure to support the use of facial recognition in law enforcement when they may not be comfortable with it in reality (Bromberg et al., 2020). It is also important to note that the participants in this survey were asked hypothetically whether police departments should utilize facial recognition in body-worn cameras. They might have held very different opinions if

the technology was currently in use in their communities. In addition, this study focuses solely on the application of facial recognition technology within police body-worn cameras and does not inquire about the integration of the technology into a citywide surveillance system, as was proposed in Orlando, Florida.

As seen in prior research, there are several public concerns associated with the prevalence of surveillance technology such as facial recognition. These concerns are often based off a fear of bias present in the system and a lack of governmental policies to regulate its use. However, prior research has failed to examine facial recognition technology as it is applied in cities, such as Orlando, to identify key problems that arise when the technology is actually implemented. Therefore, this paper will augment prior studies that discuss public opinions on facial recognition and surveillance used in policing by investigating the results of an attempted implementation of the technology in Orlando, Florida.

Conceptual Framework

My study of the Orlando Police Department's pilot program with facial recognition technology will draw upon Actor-Network Theory (ANT), which will allow for the analysis of the relationships and power dynamics between each social group and technological component involved in the program. ANT is a framework that emphasizes the intersection between technology and society by mapping the connections between different social groups and actors, which makes it a useful tool for analyzing the formation, failure, or redirection of sociotechnical systems.

This paper will primarily draw upon the concepts of ANT set out by two French sociologists, Michel Callon and Bruno Latour. These sociologists define an actor-network as a composition of multiple heterogeneous actors, both human and non-human, linked together to

form a network of associations (Callon, 1987; Latour, 1987). Ultimately, it is the strength of these associations, not the strength of the individual actors, that determines the success or power of the network (Latour, 1986).

For an actor-network to form successfully, engineers must not only solve the technical or scientific problems related to the technology, but they must also push past any sociological barriers to its adoption. Thus, economic, social, political, and cultural considerations are involved in the innovation process from the very beginning. This concept highlights Callon's idea of engineers as acting as engineer-sociologists, simultaneously addressing social and technical problems (Callon, 1987).

Central to ANT is this idea that technological engineering cannot be separated from social considerations during the formation of a successful sociotechnical system. In order to better understand how these systems develop, Callon's concept of translation can be invoked. Translation is the process by which networks form and are maintained. This process includes four stages: problematization, interessment, enrolment, and mobilization (Callon, 1986). In the problematization stage, the primary actors, termed network builders, identify the problem or goal to be accomplished and begin to identify roles in the proposed network that will be fulfilled by other actors. In this stage, the primary actors must also determine how to move the other actors past the "obligatory passage point" by shaping their interests to align with the network's goal. In interessment, the network builders recruit other actors by aligning their interests. These actors must be persuaded to adopt the primary actors' view of the problem and its solution. In the enrolment stage, the other actors begin to accept and perform their assigned roles. Finally, mobilization is the stage at which the network builders are able to represent the other actors and work to mobilize them for action. Once the network functions as a stable unit and all the

necessary actors are enrolled, the network is termed a black-box (Callon, 1986). Latour states that at this point, "no matter how controversial [its] history, how complex [its] inner workings, how large the commercial or academic networks that hold [it] in place, only [the network's] input and output count." (Latour, 1987, p. 3). This is the ultimate goal of network builders – to build a self-evident network with strong roots in society.

However, within this process of translation, we find that networks are inherently vulnerable. Each actor has agency and thus the ability to resist or stray from the network builder's vision. The resulting weak connections between actors create vulnerability within the network. In my analysis of the Orlando Police Department's pilot program with facial recognition technology, I will draw upon this concept of translation to help me identify key points at which vulnerability in the actor-network emerged, ultimately leading to the failure of the network.

Analysis

In order to understand the reasons why the Orlando Police Department's attempted integration of facial recognition technology failed to coalesce into a fully-functional network, it is first necessary to identify the proposed network's constituent actors and the key relationships that existed between them. The primary actor whom the network was built around was the Orlando Police Department (OPD). As the network builder, the OPD was responsible for defining the problem to be solved and its solution, as well as for recruiting all the necessary actors needed to make the network function. OPD's closest liaison in the process of forming this network was Amazon Web Services (AWS), a subsidiary of Amazon that supplies clients with cloud-based computing platforms and applications. In this case, the company was responsible for creating and distributing the facial recognition technology. Other key actors included the

government of the City of Orlando that sets policy for other city entities such as the OPD to follow and the public, who would eventually be monitored by a surveillance system equipped with facial recognition technology. In this paper, I will show that these two key actors were not adequately addressed by the network builders during the network formation. In addition, there were a few key non-human actors that played a critical role in the network; these actors were the technological systems needed to make the network function. The facial recognition software, called Rekognition, that was developed and supplied by AWS was central to the network, but equally as important to the system were the cameras and data infrastructure in the city that were required to carry out the functions of the software. This existing and newly installed technological infrastructure included OPD surveillance cameras, servers, and computers.

The OPD has a commitment to ensuring the safety of its residents and visitors, and it claims to be actively looking for innovative approaches to achieve public safety, such as by adopting technology-based policing tools (City of Orlando, 2019). Upon learning about Amazon's Rekognition software, the OPD chose to explore the feasibility of its use as a tool in law enforcement by entering into a pilot program with AWS. During the problematization phase of network formation, the OPD started to identify relevant actors needed to achieve its goal of furthering public safety by piloting the use of facial recognition surveillance. They worked very closely with AWS from the beginning and focused heavily on attempting to make the non-human actors – the technological components – perform their intended roles in the network. However, while they did recognize the relevance of the city government and the public in the overall network, they did not take appropriate steps to involve these groups in the process by shaping and aligning their interests with the goal of the network. In the context of Callon's concept of translation, this was a failure to move these actors past the "obligatory passage point" (Callon,

1986). This failure caught the attention of minority groups and advocacy groups, such as the American Civil Liberties Union (ALCU), who proved to be powerful sources of opposition to the network that were unanticipated by the network builder. In the sections that follow, I will argue that the network building process carried out by the OPD was flawed in that it prioritized perfecting the technology over planning for regulatory measures and that it gave too much power to the OPD, which gave rise to distrust in the community.

Prioritizing Technological Functionality Over Governmental Regulation

There were many technical issues associated with integrating the Rekognition software into the city's existing technological infrastructure that, in part, led to the network's failure. But in this section, I will argue that the OPD's decision to focus chiefly on these technical issues, intending to delay drafting governmental regulations for the technology until the issues' resolution, was an equally important factor leading to the system's failure.

In the duration of the entire pilot program, which lasted over two years, the OPD was unable to establish a single prolonged live video stream from surveillance cameras to allow for facial matches to be searched using the Rekognition software in real time. This was largely due to the inadequacy of the city's existing technological infrastructure, which was flawed by low resolution cameras, poor camera positioning, and connection issues (Roulette, 2019). With all of its focus on the technical aspects of the network, the OPD neglected to outline possible regulations to limit the technology's power. In fact, the OPD stated in a memo that it would wait until the end of the pilot program, if it was successful, to work with the City Attorney's Office to draft policy and procedures for the City Council to review (Brooks et al., 2018). The fact that the OPD was exploring this technology without any ideas of regulations that would limit its power was deeply troubling to many members of the public, who were given a voice by the ACLU.

The ACLU sent a letter to Amazon's CEO Jeff Bezos, demanding that the company stop selling the Rekognition software to governments for use in law enforcement, claiming that it is "primed for abuse in the hands of governments" (ACLU et al., 2018). One way that the ACLU feared this technology could be abused was by "raising the possibility that those labeled suspicious by governments—such as undocumented immigrants or Black activists—will be targeted for Rekognition surveillance" (ACLU et al., 2018). Since it was a technology with the capability to be abused, regulations could have been developed to assuage these concerns, engendering more confidence that certain groups would not be targeted disproportionately. But the OPD did not address these concerns by informing the public of regulatory policies that would be set, which left open the possibility that racial biases in law enforcement would be perpetuated, even amplified, by this technology.

Although the OPD may have had intentions to create regulatory measures that would prohibit the malicious use of this technology at some point in the future, its failure to address these concerns at the beginning of the network formation was a fatal mistake in the problematization phase because the group did not prioritize its relationships with the government and the public, who could have helped to propose limitations on the technology to address common concerns. The OPD also failed to align its goal of promoting public safety with the interests of other essential actors in the network like the ACLU, whose role it is to ensure the civil rights and liberties of the public are protected. The outcry that resulted from this failure was one of the factors that ultimately led to the decision to end the pilot program.

Allocating Too Much Power to the OPD

Another key mistake that the OPD made while attempting to form this network centered around facial recognition surveillance technology was that it gave a disproportionate amount of

power to itself, taking away power in the form of basic civil liberties from the public. This ultimately weakened the overall network as minorities and civil rights groups felt overlooked and began to speak out against the program. As asserted by Latour, the strength of an actor-network is judged by the strength of the relationships between actors, not by the power held by any specific actor in the network (Latour, 1986). Although it is the job of law enforcement to exercise just authority over the public, the implementation of facial recognition surveillance would dramatically increase this power, and there were no governmental regulations to check this newly established power. The OPD failed to consider that with a lack of regulation, this imbalance of power would be felt especially by minority groups, who often already feel powerless against law enforcement, and give rise to distrust in its own operations.

In a letter addressed to OPD Police Chief John Mina, a coalition of advocacy groups for minorities, such as the ACLU Foundation of Florida, the Arab American Institute, and the Florida Immigrant Coalition, asked the OPD to forgo the use of surveillance and facial recognition in law enforcement because of the threats it would impose on the civil liberties of the public, particularly minority groups. The coalition claimed that the use of this technology would exacerbate the distrust in law enforcement that many minority groups may have as a result of recent nationwide events, such as ICE raids and the FBI's targeting of Black Lives Matter activists. The coalition also warned that "[c]ommunities that already feel under attack by government and law enforcement will be less likely to engage with the OPD, even when they are victims of crime" (ACLU Foundation of Florida et al., 2018). These claims illustrate the extent to which minority groups, who are already at a power disadvantage when it comes to law enforcement, would lose trust in the OPD if the technology was formally implemented after the pilot phase. These minority groups feared that this technology would further imbalance the

power dynamic between them and the police force, creating a hostile environment of suspicion and censorship.

It is also important to note that before the facial recognition technology was proposed, the City of Orlando had implemented a program called Orlando Speaks, which aimed at facilitating connections and dialogue between the OPD, the City of Orlando, and its residents (City of Orlando, n.d.). In its letter to Police Chief Mina, the minority groups coalition acknowledged the noble efforts that the OPD has made to connect with the community, but warned that the use of this new technology would "undermine the hard work the Department does to build trust across all communities in Orlando with programs such as Orlando Speaks" (ACLU Foundation of Florida et al., 2018). Here, the coalition suggests a contradiction between OPD's past efforts which have taken into account the perspective of all groups within the community and its present intentions to launch facial recognition powered surveillance. The exacerbated power imbalance created by this type of surveillance combined with historical patterns of bias and abuse of power in law enforcement weakened the trust that the public had in the OPD. The distrust that stemmed from this imbalance of power significantly weakened the relationship between the OPD and the public, and weakened associations like these spell doom for an actor-network. Ultimately, without public trust in the system, the OPD could not carry out its central mission: to ensure public safety.

I have argued in the preceding sections that the OPD's proposed network collapsed due to public opposition caused by the OPD's failure to fully account for the interests of the community. However, some may argue that the factors explored above were not as influential in causing the network to fail as the technical problems and lack of funding available to dedicate toward making the technology work. After all, the lack of resources was the only reason formally

cited by the OPD in their announcement to cease their trial with Rekognition (Edmonds et al.,

2019). However, if the lack of resources had really been the primary issue with the system, the

OPD would have accepted more help from AWS, who was offering its pilot services at no cost to

the city. Records indicate that the OPD actually turned down an offer from Amazon to supply

and install new camera hardware that would have fixed some of the technical issues (Statt,

2019). This suggests that there was a deeper reason why the OPD chose to end the program – to

avoid the powerful public opposition from minority groups coalitions and the ACLU. The OPD

did not want to further disappoint residents' trust by giving even more power to Amazon and

taking it away from the public. Without public support or trust in the Rekognition program, the

police department decided to let the trial period with Amazon expire in July 2019 with no

immediate plans to further explore the technology (Edmonds et al., 2019). Ultimately, the OPD

was unable to justify incurring the significant costs required to make the technology work

effectively when the implementation of that tool would cause widespread distrust in the

community.

Conclusion

In this paper, I have shown that a primary reason that the OPD did not continue to pursue

the use of facial recognition surveillance was a result of the public distrust that was articulated by

advocacy groups such as the ACLU. This distrust was fueled by the OPD's decision to prioritize

resolving technological problems over drafting any regulations for the technology and by the

power imbalance between the OPD and the public that was exacerbated by the technology. Both

of these issues were encountered by the OPD because it didn't adequately define all the

dimensions of the problem in the beginning stages of the pilot program. Instead, it considered the

construction of this network to be primarily a technical challenge, failing to address the many

social barriers that existed to the technology. This Actor-Network Theory approach to understanding the OPD's failed pilot program with facial recognition software helps reveal the strong interaction between the social and technical aspects of a network that are necessary for its success. This analysis helps to show that even if the technology had performed its intended functions, it would not have worked in a society that did not accept it because of a lack of social and governmental considerations made by the network builder.

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