Reston Site Redevelopment Project
(Technical Report)

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

An Undergraduate Thesis Portfolio

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Sociotechnical Synthesis: Multifaceted Technological Designs

While my STS and technical research focus on entirely different technologies, the powerful interaction between technology and society is a theme prevalent in both topics. My technical work involved the proposal of a new high-density community development that my capstone team designed from a civil engineering and business perspective. In the design of this development proposal, multiple emerging community trends and the needs of potential occupants were considered. My STS research focuses on a specific case study in Orlando, Florida, in which the police department attempted to implement facial recognition technology in its law enforcement surveillance. I argue that the primary reason for this program's premature failure was the police department's lack of consideration of the public's civil liberties. Both works illustrate the importance of addressing the needs of all stakeholders in the ultimate success of a technology or proposal, and as such, they highlight the strong bond between technological advancement and society.

The objective of my technical work was to create a redevelopment plan for a parcel of land in Reston, Virginia that could feasibly be proposed to the community and subsequently constructed. In the design of our site layout, my capstone team took advantage of the site's unique location adjacent to a planned Metro transit station by creating a community inspired by transit-oriented design principles, which place an emphasis on alternative, more sustainable modes of transportation. On our 12-acre site, we designed a dense development with a mix of residential, office, and retail uses that featured a large, natural open space in the center of the site

to enhance the feeling of community in the development. To be successful, our final design had to be more than just technically sound; it also had to satisfy multiple different stakeholders, including future tenants, owners, businesses, and the local government. This multifaceted project allowed us to refine our technical skills of civil engineering design while also considering the financial and societal impacts that such a design can have, giving us a holistic view of the development process.

My STS research examines the unsuccessful attempt of the Orlando Police Department (OPD) to implement facial recognition surveillance as a tool for law enforcement. In order to identify the underlying cause of this failure, I frame my analysis with Actor-Network Theory, which allows me to analyze the relationships between the important social groups and technologies pertinent to the network that the OPD was trying to build around this facial recognition technology. Ultimately, I argue that the OPD ended its facial recognition program due to opposition from many advocacy groups, which was caused by the OPD's failure to ensure that the use of the technology met the needs of the community. My paper explores the dimensions of the technology's use that the OPD neglected to consider, leading to this failure. This analysis underscores the idea that social, political, economic, and cultural factors are just as essential to a successful technology as its technical capabilities.

Working on these two projects simultaneously allowed my insights from one to inform my work on the other. After studying the great impact that the community's opposition and opinions had on the use of facial recognition in Orlando, I became more sensitive to the needs and desires of the potential community for whom I was designing a development plan in my technical work. Meanwhile, my technical project, through its focus on designing for a variety of factors, including constructability, financial viability, consumer appeal, and sustainability,

heightened my awareness during my STS research of factors that the OPD should have considered before implementing such a controversial technology. Both of these projects helped me to realize the importance of considering the impact that a technology or proposal can have on all stakeholders involved – an idea which will be instrumental in my work as an engineer.