The Political Implications of Amazon Go Stores

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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Introduction

Amazon recently opened a grocery store called Amazon Go, which features revolutionary Just Walk Out Technology, in which shoppers can simply exit the store without having to wait in line or needing to scan items in order to checkout. By using technology similar to that in self-driving cars, shoppers merely need to scan their Amazon Go apps upon entering the store, and every item they pick up off the shelves will be automatically added to a "virtual cart" (*Amazon.com: : Amazon Go*).

While the technology is very innovative, engineers and users must recognize that there are politics embedded in the Amazon Go stores. By creating Just Walk Out technology, Amazon has essentially entirely eliminated the need for cashiers in grocery and retail stores. Millions of Americans work as cashiers (*Cashiers : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics*), so this may be catastrophic for cashiers, even if some lost jobs are translated into increased employment in other industries. If we continue to only consider the Amazon Go stores in terms of the technological advantages they provide to shoppers, we will misunderstand the way that these stores express the power relations that affect people with low-wage jobs, especially women, Black and Latino people, and older workers.

Drawing on the technological politics framework, I argue that the Amazon Go stores are embedded with power relations that disadvantage low-wage workers by displaying Amazon's focus on the technology and by showing that these workers, especially of certain backgrounds, are losing jobs and are unable to pursue alternative careers. Technological politics will allow me to identify the groups that are being marginalized and understand the role of intentionality in the creation and expansion of the Amazon Go stores.

Background

Amazon opened its first Go store in early 2018 as a concept to revolutionize the grocery shopping experience. The "grocery store of the future" (Xie, 2018) uses Amazon's new Just Walk Out Technology in which shoppers do not have to check out. Shoppers begin by scanning the Amazon Go app at the entrance of the store. While shopping, their technology "detects when products are taken from or returned to the shelves," emulating a "virtual cart." Shoppers can then walk out of the store, and their accounts will be charged for the items in their carts (*Amazon.com: : Amazon Go*). The Amazon Go concept is innovative because it eliminates the need for cashiers; each store requires only 3 to 10 employees at any given time (Statt, 2017). As of November 2019, Amazon had 21 Go stores, and it was planning to expand to approximately 3,000 stores by 2021 (Cheng, A., 2019).

Literature Review

Amazon Go is a relatively new technology, so there is limited research regarding the stores and how they may be embedded with power dynamics. Instead, I will look at sources that analyze the potential impacts of Amazon Go and how similar technologies, such as the creation of self-checkout, have affected the workforce.

In one article called *The Amazon Go Concept: Implications, Applications, and Sustainability*, authors Polacco and Backes assert that while Amazon Go may disrupt the retail industry and reduce the number of cashiers, these jobs would be reallocated to new positions. For example, they explain that stores will still require supervisors and customer service personnel to "answer questions, handle returns, and handle quality related issues." They would also still need security to ensure that items are not stolen. Furthermore, the authors argue that this technology

would yield increased personnel to maintain the machines and that cashiers would be available to "perform other duties" (Polacco and Backes, 2018).

While Polacco and Backes acknowledge that it is likely that there will be a decline in the number of cashier jobs due to these stores, they assume that people who previously held these jobs will have the skills to obtain these other technologically driven jobs (Polacco and Backes, 2018). Jobs mentioned, such as maintaining the scanning machines, generally require training in basic mechanical engineering; this argument fails to consider the people who do not have the resources to complete such training programs.

Another article I reviewed is called *The End of Work or Overworked? Self-Service, Prosumer Capitalism, and "Irrational Work"* by Christopher Andrews. Andrews claims that "while the number of self-checkout lanes has increased dramatically, employment in supermarkets has remained relatively stable." He cites data from the Bureau of Labor Statistics that indicate a slight increase in the number of cashiers from 2002 to 2015 in the United States (Andrews, 2018). However, this data does not take into account the population growth in America from 2002 to 2015 and whether the proportion of people living in the U.S. versus the number of cashier jobs has changed. This data also does not consider the number of people who require entry-level jobs because they have a limited skillset and whether this number has changed in the past several years.

While Amazon Go stores are relatively new to the industry, it is important to understand how such an emerging technology may impact the workforce, specifically in terms of people who depend on low-skilled cashier jobs. Existing research considers the overall cashier workforce; however, it overlooks the people who choose to be cashiers because of lack of other options – people looking for low-skilled jobs. This paper will utilize the technological politics

framework to better understand how Amazon Go disproportionately disadvantages cashiers, especially of certain backgrounds.

Conceptual Framework

In order to analyze the effect of Amazon Go stores on underprivileged populations, I will draw from the technological politics framework, which was developed by Langdon Winner in "Do Artifacts Have Politics?" Technological politics was written as a response to frameworks like social construction of technology, in which technology is shaped by the surrounding technology, and technological determinism, in which technology motivates changes in society. Instead, Winner provides a new perspective in which technical systems are "deeply interwoven in the conditions of modern politics." He claims that the technology itself does not matter as much as the political system in which the technology was created (Winner, 1980).

In order to fully understand this framework, we must first learn what Winner meant by the term "politics". Winner defines "politics" as "arrangements of power and authority in human associations as well as the activities that take place within those arrangements" (1980). Thus, technological politics is a theory about how technologies affect the relationships of power among different groups of people.

In his analysis, Winner outlines two interpretations of technological politics, the first of which is relevant to my research. Winner explains this interpretation as: "instances in which the invention, design, or arrangement of a specific technical device or system becomes a way of settling an issue in the affairs of a particular community." Through this explanation, Winner claims that people in power can design technologies to enforce a particular political agenda in a community (1980).

Winner also describes the role of intentionality in the technological politics framework. While pushing a political agenda may only seem possible in a negative context, it is possible to have good, or even no, political intentions when designing a technology. According to Winner, the reason some people benefit from technologies more than others is "that the technological deck has been stacked long in advance to favor certain social interests, and that some people were bound to receive a better hand than others" (1980).

I will use the technological politics framework to determine the political intentions and effects of the Amazon Go stores on cashiers. In order to incorporate this framework, I will identify which groups are disproportionately disadvantaged by the Amazon Go stores and whether the embedded politics are intentional or unintentional.

Analysis

As Langdon Winner states, "what matters is not technology itself, but the social or economic system in which it is embedded" (1980). In order to analyze how Amazon Go stores affect various populations, we must better understand the politics of the surrounding economic system. I will demonstrate that the development of the Amazon Go stores disproportionately exploits cashiers by portraying Amazon's focus on technology and by showing that cashiers, especially of some backgrounds, are losing jobs and unable to pursue other careers.

Amazon's Focus on Technology and Customers

The Amazon Go stores are examples of politically biased artifacts that disadvantage groups of certain backgrounds because when developing these stores, Amazon's focus was solely on the technologies and potential customers. An example of this is seen in the Frequently

Asked Questions section of the Amazon Go website. Amazon's response to "How does Amazon Go work?" is:

> Our checkout-free shopping experience is made possible by the same types of technologies used in self-driving cars: computer vision, sensor fusion, and deep learning. Our Just Walk Out Technology automatically detects when products are taken from or returned to the shelves and keeps track of them in a virtual cart. When you're done shopping, you can just leave the store. A little later, we'll send you a receipt and charge your Amazon account. (*Amazon.com: : Amazon Go*)

It is clear from this excerpt that Amazon is focused on the technology and not on the employees who are affected by it. Amazon compares its technology to that "used in self-driving cars" in order to highlight the innovation and creativity that goes into these stores. The language portrays excitement for the Just Walk Out Technology, which completely automates the shopping experience. In the entire process, shoppers have no need to interact with store employees. The technology tracks when a shopper takes something off of the shelf, and when customers leave the store, the facial recognition algorithm charges their Amazon accounts. Nothing in this excerpt mentions any of the people that will be involved in this operation (*Amazon.com: : Amazon Go*), indicating that Amazon is completely invested in automating the process and entirely removing human interaction from the grocery shopping experience.

Amazon Go's automated process can be considered political because it eliminates the need for employees in the stores. By automating the grocery shopping experience, Amazon is attempting to lower the costs required to run the store, which may or may not translate to lower costs for the consumer as well. Amazon also hopes to make the lives of shoppers easier. Just

Walk Out Technology indicates there are no lines to purchase items, and they do not need to scan their items to exit, allowing consumers to save time.

In making the customers' lives easier, however, Amazon is causing cashiers to lose their jobs. Because of this technology, Amazon will not employ cashiers at its Go stores. One study estimates that on average, a grocery store employs 5 cashiers per store (Focal Systems, 2019). Amazon plans to open approximately 3,000 stores in the coming years, which equates to 15,000 cashiers who will not be employed at its Go stores. Amazon is generally doing better than average – while regular convenience stores of similar size would generate approximately $1 million per year, each Amazon Go store has $1.5 million of annual revenue (Levy, 2019). There is no doubt that this technology is taking the world by storm; traditional grocery stores will soon lose sales as they transition into Amazon Go sales. As these sales transition, Amazon Go will become increasingly successful, eventually taking over the market. However, people who worked as cashiers in traditional supermarkets will be unable to get jobs at the Amazon Go stores. These 15,000, and eventually more, cashiers will thus be jobless as soon as Amazon Go expands.

This is an example of the Amazon Go technology as a political artifact. I can examine the relations of power that go into entirely eliminating cashiers from these stores. Amazon executives who had the power to make such a decision were thinking about cost-cutting as well as the preferences of shoppers. By eliminating these jobs, the powerful executives are furthering the wage gap between themselves and the cashiers who are losing their jobs. When they decided to expand from just one store to 3,000 across the United States, they also inevitably decided to change the power dynamics across the nation. According to Winner, with such a technology, Amazon must also consider the livelihood of grocery store employees and its political

implications (1980). Whether they considered it or not, when employees are no longer required in the stores, they lose their jobs. Depending on how much these stores scale, Amazon Go's technology could greatly affect the job market and even the entire national economic balance.

It is clear that Amazon Go stores are embedded with politics in that they will disproportionately cause job losses for cashiers due to Amazon's sole focus on technology and customers. Some may argue that this is a fairly isolated case – Amazon only has 21 stores, and while they plan to open a few thousand in the coming years, these are merely plans that may not actually pan out. However, this view does not consider the fact that Amazon Go is only a small portion of the retail and grocery store industries, and other companies can eventually use these technologies, too. Amazon Go represents the future technology of these industries – this Just Walk Out Technology can be used in any retail store, and we are likely to see a rollout soon.

Amazon is planning to create a test supermarket, which will be much larger than the Amazon Go convenience stores, in 2020. According to one Bloomberg article, "Amazon aims to support stores as large as 30,000 square feet, the size of a typical modern supermarket." By doing so, Amazon is tapping into the "$900 billion U.S. grocery industry and perhaps other areas of retail, as well" (Day, 2019). If successful, Amazon will be able to completely transform the concept of grocery stores and overall retail.

Furthermore, 7-Eleven recently announced that it would be opening a store similar to Amazon Go – a picture of one such store can be seen below (Biron, 2020):

7-Eleven has opened this store up to employees, and it operates in the same way that the Amazon Go stores do. As seen in the picture, there are no cashiers – shoppers can scan their mobile apps upon entering the store and simply walk out when they are done shopping. As with Amazon Go, 7-Eleven is concerned with the consumers and technology more than anything: the senior vice president and chief information officer stated that its "goal is to exceed consumers' expectations for faster, easier transactions and a seamless shopping experience" (Biron, 2020). 7-Eleven has over 9,000 stores across the United States (O'Connell, 2019), and if this technology expands to all of these stores, there could be major effects on cashiers' jobs.

While the Amazon Go stores have probably only affected a handful of cashier jobs so far, if Amazon overtakes the entire market, millions of cashiers' jobs may be at stake. These job losses will hurt women, Black and Latino people, and older generations more than anyone else, demonstrating that the Amazon Go stores may have immense political implications if expanded or implemented by other companies.

Other Employment Opportunities for Cashiers

Another way in which the Amazon Go stores disproportionately affect cashiers is that low-skilled workers, like cashiers, are often unable to find other jobs. While Amazon Go will not be hiring cashiers, there is a wide chain of events that goes into creating one of these stores, which may provide alternate job opportunities. In order to create these stores, Amazon must hire a number of software engineers, hardware-design engineers, data scientists, and cybersecurity experts. Amazon Go and other retail companies require many of these employees to maintain their e-commerce platforms, which has greatly increased in the past few years. For example, "the share of tech-related job postings from major U.S. retailers rose from 10% of the chains' total postings in 2016 to 23% in 2019, according to jobs marketplace ZipRecruiter" (Cheng, M., 2019).

The reason there are so many people working as cashiers in America is that being a cashier is a low-skilled job that does not require much education or prior training. The U.S. Bureau of Labor Statistics has a table outlining facts about being a cashier, which I have copied below:

Quick Facts: Cashiers	
2018 Median Pay	$22,430 per year $10.78 per hour
Typical Entry-Level Education	No formal educational credential
Work Experience in a Related Occupation	None
On-the-job Training	Short-term on-the-job training
Number of Jobs, 2018	3,648,500
Job Outlook, 2018-28	-4% (Decline)
Employment Change, 2018-28	-138,700

This chart states that being a cashier does not require any "formal educational credential," meaning cashiers do not need even a high school degree to work. Anyone from a high school

student to a retiree could work as a cashier. The chart also states that cashiers require some on-the-job training to learn the skills required for this job. This means that because there are few skills required to actually obtain the job, they must get the proper training once they are hired. Finally, we can see that the job outlook is expected to decrease by 4% from 2018 to 2028, while the average growth rate for all jobs is 5% (*Cashiers : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics*). This table makes it clear that cashier jobs do not require much training or experience, and they are at risk because of efforts including Amazon's.

I can use a similar table which analyzes software developer statistics to compare and contrast with the cashier qualifications:

Quick Facts: Software Developers	
2018 Median Pay	$105,590 per year $50.77 per hour
Typical Entry-Level Education	Bachelor's degree
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2018	1,365,500
Job Outlook, 2018-28	21% (Much faster than average)
Employment Change, 2018-28	284,100

According to the U.S. Bureau of Labor Statistics, the typical entry-level education for a software developer is a bachelor's degree, meaning software developers must graduate high school and attend four-year colleges in order to get jobs. Furthermore, unlike cashiers, there is no on-the-job training for software developers. This is because software developers cannot obtain their jobs without having "strong computer programming skills:" they must already have these skills before being hired. Unlike the cashier job outlook, the number of software developer jobs is expected to increase by 21% over 10 years (*Software Developers : Occupational Outlook Handbook: : U.S.*

Bureau of Labor Statistics), which aligns with other research suggesting that software developers will be needed to create the technologies that are taking jobs away from low-wage workers.

These differences bring light to the fact that as low-skilled jobs like cashiers are being eliminated, jobs like software developers are increasing in demand. However, because their skills and backgrounds required differ, there is no easy or automatic transition from one job to the other. Becoming a software developer would require attending school and/or completing training programs, which in turn requires time and money. Bachelor's degrees are getting increasingly expensive, and with a cashier's median annual salary of approximately $22,000 (*Cashiers : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics*), it is unlikely that cashiers would be able to afford such a training program, much less a bachelor's degree, without some financial support.

These job losses will disproportionately affect women, Black and Latino people, and older populations because they are the most dependent on low-skilled jobs. Statistics show that women "'shouldered the entirety of the job losses' in retail between November 2016 and November 2017, while men actually gained jobs in the industry" (Howland, 2017). Similarly, job losses affecting cashiers would disproportionately affect Black and Latino people. According to one article, "cashiers, the lowest paid position in the retail sales force, include disproportionately high shares of Black and Latino workers," where a quarter of White retail sales workers are cashiers, while a third of Black and Latino retail sales workers are cashiers (Ruetschlin and Asante-Muhammad, 2015). This means that if cashiers are let go, the unemployment will affect Black and Latino people more than White people. Finally, senior workers rely on jobs such as being a cashier, server, or laundry attendant when they lose their other jobs because there is little to no opportunity for growth in their skillsets due to a lack of government retraining programs

(Akhtar, 2019). Thus, there are biases in several different ways: jobs are stacked against people based on their gender, race, and age, so the job loss will affect some groups of people much more than others.

Amazon's intentionality on and awareness of the subject is seen through the training programs that it has recently developed. Amazon is aware that this transition from low-skilled jobs to software engineering is difficult, so it decided to retrain some of its warehouse employees to gain technical skills, like understanding Amazon Web Services. Amazon is planning to spend approximately $700 million to train 100,000 workers, averaging at $7,000 per employee, by 2025. "The company only expects its roles to become more technical" (Siegel, 2019), indicating that Amazon Go is aware of the difficulty for low-skilled workers to find technical roles, proving that the political bias is at least somewhat intentional.

While the training program is only for people who work in Amazon warehouses, the same principles can apply to its Amazon Go stores. Amazon is well aware of this industry transition from low-skilled to technical jobs, especially because Amazon and its Go stores are a big factor in this transition. Amazon Go is inevitably cutting down the number of cashiers required in the industry and increasing the number of engineers required to build technologies for these stores. Amazon is attempting to transition some employees by creating training programs, but because these are only available to warehouse workers, cashiers across the country are left behind. The inherent politics from the Amazon Go stores indicate that people who cannot afford their own training programs or bachelor's degrees will become unemployed unless they can find another low-skilled job alternative.

Conclusion

In this paper, I argued that the Amazon Go stores are political in that they marginalize low-wage cashiers, especially women, older workers, and Black and Latino people. As Langdon Winner stated, "scientific knowledge, technological invention, and corporate profit [can] reinforce each other in deeply entrenched patterns that bear the unmistakable stamp of political and economic power" (1980), which is exactly what we see in the case of the Amazon Go stores. If we only focus on the technology behind these stores, we will fail to understand the way in which these stores disproportionately affect some groups of people. While Amazon Go stores are still limited, their technology can easily expand across the industry – even 7-Eleven recently began testing stores without cashiers in an effort to compete with Amazon (Biron, 2020). The world knows that retail and grocery stores without cashiers are the future, but before we completely submit to this idea, we should first consider the livelihoods of the people who will be affected by this transition.

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