

**The Challenges of Single-Use Plastic Bans on
Historically Marginalized U.S. Communities**

(STS Paper)

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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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Abstract

This paper addresses how bans on single-use plastics in the United States are seldom discussed through the lens of environmental justice, causing marginalized groups to take the brunt of the negative implications of such bans. The analysis will be guided using the Science, Technology, and Society framework of Social Construction of Technology, and how this framework organizes complex issues better to understand the implications of technology on varying social groups. Specifically, it will look at how marginalized groups in the United States will be impacted by sweeping bans on single-use plastics, and the actions that must be taken to mitigate these effects and create a more inclusive environmental movement. The paper will argue that the historical benefits of plastics and the negative impacts of their bans should take precedent over the emerging and exclusionary move towards ‘sustainability’. It does not ultimately negate that plastic is indeed harmful to the environment, but argues that the risks associated with the environment must be addressed in conjunction with the risks to the people.

Introduction

The terms 'zero waste' and 'sustainability' have been adopted as a regular part of most people's vocabulary, but what do they mean? While the notion of minimizing landfilled waste may appear attractive at first glance, the recent surge in plastic bans is not the environmental savior that it claims to be. Plastic is undeniably a great threat to the continued health of the environment, but the lens through which plastic bans are being approached fails to acknowledge a critical population that is most impacted by their effects (Jenks & Obringer, 2019). Throughout this paper, I will address how bans on single-use plastics (SUPs) will impact equitable access to materials and goods for disabled persons and lower-income communities. Banning single-use plastics for reasons that remain blind to environmental injustices in the United States will inevitably have a detrimental impact on several social groups, creating unique problems that will require creative solutions to amend.

In this paper, I will address three very specific types of SUP bans and the implications that they have on different communities in the United States. Specifically, I will look at how plastic straw bans impact disabled people, how plastic bag bans affect people of different socioeconomic statuses, and how SUP bans in the hotel industry will influence houseless populations. While this will not encompass all plastics that may be included in bans, I seek to acknowledge the ones that will have the most detrimental effects. To begin the paper, the history of plastic in the U.S. will be discussed from its initial inventions to the backlash against it that led to the surge in SUP bans. From there, we will understand the benefits provided by plastic in modern society. An analysis of specific bans will then be conducted using a common framework from Science, Technology, and Society (STS) texts, focusing specifically on the marginalized groups outlined above. To conclude the paper we will address how the effects on marginalized

groups can be mitigated moving forward to create more equitable policies, and refute the arguments that support SUP bans.

Methodology

Throughout this paper, I will view the complex issue of single-use plastics through the lens of the Social Construction of Technology (SCOT) framework. In focusing on one of the Science, Technology, and Society (STS) texts, this is one of the many STS frameworks that can be used to better understand issues that intersect with both technological and societal implications. As defined by Bijker and Pinch (1984), SCOT is a descriptive model of the relationship between the social environment and the actual content of technology. The foundation of the model is that technology is shaped around societal structures and interpretations, allowing for flexibility in the design of such technology, or artifact. Rather than providing a linear solution to a problem, it treats problem-solving as a multi-directional issue; most notably this involves an artifact, a social group, the problem, and solutions.

In the context of this paper, we will break down the issue based on its social groups and how these play a role in both defining the problem and creating a solution. The artifact in this situation will be the primary focus of this paper: plastic. The social groups include any group that consumes or uses this material or is otherwise impacted by it in some way. The conflicting groups outlined here will include advocates for the sustainability movement and marginalized communities including disabled persons and lower-income communities. As discussed within the SCOT framework, the problem at hand will differ based on the impacted social groups. For the sustainability advocates, the greatest problem will be that of plastic pollution. Conversely, the greatest problem for marginalized communities will be the bans that are being placed on

single-use plastics. The solutions for these varying issues, whether technological, judicial, or moral, depending on the relationship between the social group and the problem and their perceived solutions. Therefore, as the framework intends and discusses, there is not one encompassing solution to the issues that will be addressed.

A Brief History of Plastic in the U.S.

Plastics have been around for well over a century and have shaped much of daily life in modern society. The first recorded synthetic polymer, later patented Celluloid, was developed in 1869 by a man named John Wesley Hyatt (Britannica, 2021). Hyatt stumbled upon this first successful plastic-like material in search of a more sustainable ivory alternative. He found that by mixing nitrocellulose from wood or cotton with camphor, he had created a material that modeled ivory and similar products found in nature. Because this material did not require a substance as finite as elephant tusk, it served as a more attractive option. By 1907, the first plastic made entirely of synthetic materials was developed by Leo Baekeland and given the name Bakelite. This plastic served several purposes mostly in the realm of insulation, but unlike Celluloid, it had the potential to be mass-produced (Science History Institute, 2019). The recognition of plastic's potential to conform to widespread needs stirred rapid action into the evolution of polymer research. Cellophane followed closely behind Bakelite with its development in 1913 (Chalmin, 2019).

Discoveries of new plastics ceased during World War I but saw a rapid uptick following the end of the war. Polyvinyl chloride, more commonly known as PVC, was developed in 1927 followed by polystyrene and nylon in 1938, and polyethylene, today the most abundantly used plastic in the United States, in 1942 (Chalmin, 2019). With the start of World War II, plastic

development accelerated to adapt to wartime needs. In the United States, plastic production increased by 300 percent (Science History Institute, 2019). Products such as parachutes, armor, and ropes were created from nylon, and Plexiglas replaced glass aircraft windows (Science History Institute, 2019). However, plastic production did not begin to slow following the war. The value of plastic and the desire of consumers for new products continued to feed a growing market for production (*History and Future of Plastics*, 2019). As plastic products became a normal and sometimes necessary part of daily life, global production skyrocketed. By 2017, the world was producing 348 million metric tons of plastic, compared to a mere 1.5 million metric tons in 1950 (Chalmin, 2019). The convenience of this product overshadowed the potential implications that it would have on the environment and the world's populations as it continued to be mass-produced.

The Backlash Against Plastic: A Socioeconomic Analysis

Enthusiasm over the convenience and accessibility of plastic did not last long after the war. Public perception of the resource grew skeptical as plastic debris began appearing in oceans in the 1960s and the book *Silent Spring* was published to express the urgency of plastic waste's effects on the environment (*History and Future of Plastics*, 2019). In subsequent years, it became clear that marginalized groups of lower socioeconomic status were inevitably going to be the most affected by such environmental waste. This emerging global pollution crisis threatened the livelihood and health of lower-income communities (*Plastic Pollution is an Environmental Injustice to Vulnerable Communities – New Report*, 2021). Those that could not afford to relocate or access alternative resources were left with few options when it came to plastic.

Ban on Single-Use Plastics

Every individual living in the modern United States uses single-use plastics daily. Whether they be plastic straws, take-out containers, shopping bags, water bottles, or others, these plastics have become a nearly irreplaceable part of life today. In 2018 alone, the Environmental Protection Agency reported that plastic waste generation totaled nearly 35.7 million tons in the U.S. for the year (Environmental Protection Agency [EPA], 2021). The response from environmental activists, legislatures, and politicians has been reflective of the climate crisis that this waste poses.

The growing recognition that the world is on the precipice of a complete climate disaster has inspired policy changes from over 60 countries to reduce plastic packaging and other single-use plastic materials (Gray 2018). In the United States, several states or cities have implemented a plastic ban on some level, focusing primarily on plastic bags. Former Governor Ralph Northam of Virginia implemented an executive order in 2021 that stated that all state agencies were to immediately discontinue the purchase and distribution of single-use plastics and completely phase out their use by 2025. This will not be the only order of its time as calls for environmental protection grow louder, but they may not accomplish the intended goals for everyone.

Modern Benefits of Plastic Use

Although plastic has earned a bad reputation over the past few decades, there are many areas in which it has become indispensable for modern society. Particularly when it comes to single-use plastics, they are generally lightweight, non-reactive, waterproof, and inexpensive, making them ideal for daily use (Ritchie, 2018). Additionally, plastics have proven to be

essential in life-saving situations, often have fewer tradeoffs when it comes to environmental pollution, and can reduce other forms of waste. When disaster strikes, plastic plays a large role in providing life-saving supplies to individuals such as water bottles, personal protective equipment (PPE), plastic syringes, and plastic toiletries, ultimately making medical equipment in disasters more accessible (Goodwine, 2019).

Despite the significant backlash against plastics because of their harmful effects on the environment, they may do less harm than the alternatives. In a study conducted by The American Chemistry Council, they proved that the alternatives are often costlier in terms of the environmental impact, production, material recovery, and ocean damage (Goodwine, 2019). This study demonstrates that plastic alternatives may not be the environmental saviors that they are expected to be. The costs of such alternatives will often outweigh the benefits, causing more harm than good in the long run. Finally, plastics have played a critical role in minimizing food waste and contamination by their use in food packaging. The practice of wrapping food in plastic creates significant plastic waste, but it helps to mitigate the waste that would otherwise occur from spoiling, rot, or contamination via pests and disease (Opara, 2013). Plastic use is a complicated and nuanced issue that has permeated into all facets of daily life. There is no conclusive answer as to whether the detrimental effects of plastic entirely outweigh the benefits and convenience that it provides.

The Impact of SUP Bans on Marginalized Communities

Plastic uses span far beyond convenience for many communities, sometimes serving as an essential rather than a luxury. The sustainability movement has become a means of expressing ability and class rather than genuine concern for the environment. When policies such as

single-use plastic bans are put in place, often the only consideration is the impact that plastic waste has on the environment itself. Environmentalists advocate for these policies to safeguard the future of the climate. However, those that will suffer the most from the impacts of plastic waste and climate change do not often have the option to access alternatives and are not considered as part of the discussion. For that reason, environmental justice must also play a role in the decision-making process of these policies. This justice framework looks at the effects of environmental risks specifically on marginalized communities (Jenks & Obringer, 2020). As regulations on single-use plastics have become more common in recent years, discussions of the intersection between ableism, socioeconomic status, and the sustainability movement grow more relevant. As Jenks & Obringer (2020) ask, “are environmental solutions successful or, normatively, a public good if they result in a disadvantage to large swathes of the population?”

On Abilities:

To better understand the influence of plastic bans on specific groups, the SCOT framework can be applied to a multitude of social players. Specifically, I will begin by looking at people with disabilities and the problems that plastic bans will give rise to. In 2016, an image of pre-peeled oranges in plastic containers in a grocery store began circulating on social media, drawing a lot of attention and backlash to a seemingly prevalent issue of plastic waste (Somerville, 2016). After all, oranges come with a natural ‘wrapper’ of sorts that preserves their freshness. The perception of plastic use in this instance was critical of the laziness that must exist for there to be demand for such a product in the first place (Somerville, 2016). For some people, however, this is not a convenience but a necessity. For an able-bodied person, peeling an orange or fixing a meal may not seem like a challenge worthy of producing plastic waste deemed

unnecessary. A person living with a disability that might otherwise be unable to perform such tasks independently would disagree.

Many issues of a similar nature exist in the discussion of single-use plastics, with one becoming increasingly mentioned in recent years: plastic straw bans. Though plastic straws are not a primary contributor to plastic waste, they became a major point of contention in the environmentalist community when videos of injured marine life began to surface a few years ago (Jenks & Obringer, 2020). Immediate backlash encouraged many companies to move away from single-use straws, replacing them with alternative materials or simply no straws at all. The disabled communities and their allies then retaliated on social media with the hashtag #SuckItAbleism, to draw attention to the necessary role that plastic straws can play in the lives of people with disabilities (Jenks & Obringer, 2020). The problems for this social group under the SCOT framework include issues of material flexibility, cleanliness, injury and choking risks, affordability, and temperature resistance of alternatives. For many people in this community, plastic straws provide a safe and viable option to gain independence in taking care of oneself.

With growing recognition of this reality for the disabled community, change has yet to come. Even with some places of business recognizing the need for straws for some of their customers, people are forced to out themselves as having a disability to be granted access and can still be denied on an individual basis (Danovich & Godoy, 2018). Without the representation of this significant community, the banning of single-use plastics including straws cannot be considered a successful environmental movement. In addressing these effects of plastic bans, it must also be noted that disabled people are at a disproportionate socioeconomic disadvantage compared to able-bodied people with an undeniable connection between disability and poverty

(Jenks & Obringer, 2020). Therefore, disabled people are not the only ones that will be negatively impacted by widespread bans of this sort.

On Socioeconomic Status:

Starting again with the issue of pre-peeled and packaged oranges, I will turn to lower-income communities as the second social player under the SCOT framework. Some of the problems shared by this social group will inevitably intersect with those outlined above, but there are still many that are unique to people based solely on their socioeconomic status. In the case of the packaged oranges, considerations of food accessibility must play a role in making policy decisions as significant as single-use plastic bans. To understand this issue, Ver Ploeg et al. (2011) define what it means to have low access to food as “at least 500 persons and/or at least 33 percent of the population lives more than 1 mile from a supermarket or large grocery store (10 miles, in the case of rural census tracts).” While most people with limited food access live in urban areas, greater issues arise in rural communities. Rural areas with a large portion of their population categorized as low-access, by being 10 miles or more from a supermarket or large grocery store, are deemed food deserts (Ver Ploeg et al., 2011). Much like it sounds, a food desert implies that the community faces the equivalent of a drought when it comes to accessing fresh food. Many people living in rural areas are forced into it based on their socioeconomic status. This reality for many people will shed some light on the importance of plastic packaging.

In looking at the SCOT framework, the next step is to understand the problems that arise for this social group. For people living in food deserts, finding food that will last between grocery store commutes can be a burdensome task. This, along with the fact that access to fresh produce is not often realistic or affordable, served as one of the supporting reasons for having

pre-peeled oranges in their plastic containers (Somerville, 2016). The impact that plastic has had on food preservation cannot be discounted entirely as wasteful consumption when the people that it most benefits often do not have an alternative. Gray (2018) describes plastic in grocery stores as a “sophisticated tool for increasing the shelf-life of your food,” ultimately allowing the food to last significantly longer than it otherwise would. The difference between food items being preserved for a few days versus a few weeks is very significant for people that do not have the option to buy new fresh produce every week.

The other side of understanding this issue requires an investigation of how the food gets transported home. As established by the definition of a food desert, people with low access are either 1 mile (urban) or 10 miles (rural) from the nearest grocery store or supermarket (Ver Ploeg et al., 2011). Getting the preserved food from the store to their home becomes a challenge on its own. In many cities around the U.S., plastic bags have been banned from grocery stores. We will focus specifically on questions asked of the Baltimore legislature when they enacted a ban in 2020. The primary question that is not unique to this location inquires about the additional stress that plastic bag bans will place on low-income residents when they are incurring yet another cost to either pay for paper bags or invest in reusable ones (Wilson, 2020). While a few cents extra for a bag or a few may seem insignificant to many people, the speed at which that can add up may be far more significant for someone already struggling with financial security.

SUP Bans and Houselessness

The final social group that we will look at under the SCOT framework is the houseless community in the United States. While this group falls under the category of the economically disadvantaged, there are more challenges that they will specifically face as a result of SUP bans.

We will look specifically at how plastic bans will affect accessibility to necessary hygiene products. Therefore, issues with plastic bans become not just a question of economic accessibility but public health as well. In addition to the grocery industry implementing plastic bans, the hospitality industry saw an increase in SUP bans beginning in recent years. For hotel chains, this entails eliminating single-use plastic bottles and toiletries that are often expected in their bathrooms and replacing them with bulk dispensers instead (Harris, 2019). Several hotel chains have implemented these types of bans, with Marriot International and InterContinental Hotels being two of the notable ones. Between these two chains, Harris (2019) estimates that they would eliminate approximately 210 million miniature bottles every year. While this is a win for plastic waste, it will inevitably be detrimental to the houseless population in the United States. The U.S. Department of Housing and Urban Development reported in 2018 that there were over 194,000 unsheltered houseless people on any given night in the United States. While this value may fluctuate day to day, the fact remains that many unsheltered persons rely on miniature plastic bottles to transport hygiene products to public sanitation facilities (Harris, 2019). The lack of access to basic sanitation necessities will inevitably lead to public health consequences.

Mitigation for the Disproportionate Attacks on Marginalized Peoples

In reaching the final part of the SCOT framework, we have to look into potential solutions for the social groups that are at play and their unique problems. Circling back to the first issue addressed above, there are ways in which plastic straw bans could be implemented equitably. Many restaurants will provide waivers that allow customers access to straws given a physical or medical reason to do so (source). While this is critical for increasing the equity of

such a ban, these requests require a person to out themselves and can still be denied by individual institutions. For this reason, the blog by incarney22 (2020) recommends that a corrective system be implemented in conjunction with the ban to ensure that restaurants have to comply with waivers. On the issue of plastic bag bans impacting people of lower socioeconomic status, the same blog recommended that a system similar to the SNAP Food Benefits program be implemented to allow people below a certain income threshold to have free access to reusable bags. A program like this would help to negate the effects that plastic bag bans have on the poorest communities, though it would not solve the issue of plastic packaging in grocery stores that will negatively impact those in food deserts.

Looking at the final social group mentioned under the SCOT framework, there are many ways in which the intersection between houselessness and plastic bans is being evaluated. The solution in question would not directly impact the elimination of plastic hygiene products from hotel rooms, but it could provide an option for unsheltered people that may depend on these products. Essentially, the goal would be to create more shelters for unhoused people using the plastic waste that already exists in the environment to construct them (Dalitis, 2021). Plastic that does not get recycled has the potential to be repurposed to create affordable housing or additional shelters that would in turn provide access to the products that houseless people are otherwise losing. None of these solutions will answer every problem faced by each social group, but they are stepping stones to better understanding how policies such as SUP bans can be enacted equitably.

Counterarguments

There are several environmental arguments as to why single-use plastic bans should be enacted to protect the future of the climate and its inhabitants. In this section, we will look specifically to refute arguments that oppose those presented for accessibility. First, we will revisit the question of whether environmental solutions can be deemed successful if they result in a disadvantage for many social groups. The benefits and consequences are difficult to weigh against each other, and it could be argued that the disadvantages do not ultimately outweigh the disadvantage of an impending climate crisis. In the case of plastic straw bans, some metrics provide clarity into the urgency (or lack thereof) of the situation. Studies have found that plastic straws make up approximately seven percent of all plastic waste in the U.S. by piece, making up even less of this total in weight (Godoy, 2018). There is no denying that this waste has an impact on the environment, but it is not as significant as some people may think and an outright ban will not solve the true underlying issues of environmental degradation.

Next, we must understand the implications that food deserts truly have on food accessibility and the role that plastic can play in lengthening this lifespan. One argument, often stemming from those who do not experience this kind of food insecurity, is that it is not plausible to conclude that the commute to get food is significant enough to prevent outright bans. One mile in urban settings and 10 miles in rural areas may not seem significant, but we have to consider other factors that come into play for many of these communities. People often rely on public transportation in urban areas, and others simply cannot afford the cost of gas to make frequent trips to the nearest grocery store in addition to affording the food itself (Ver Ploeg, 2010). If the shelf-life of food products can continue to be lengthened enough to last between visits, it would

make a big impact on the lives of people that simply cannot participate in the normative ‘sustainability’ practices.

Finally, we will look at the case of sanitation necessities for the houseless population. Many houseless individuals remain unsheltered as discussed before, but it is arguably unfair or unclear to equate the hotelier industry’s cutback on SUPs with the access to these same products for houseless populations. To refute this, it must be noted that many organizations around the country that depend on donations of unused hotel toiletries to provide for unsheltered populations in many cities (Jet, 2021). These products can be donated directly by the hotels themselves or by their guests that accumulate unused miniature bottles. By taking these away from thousands of hotels, such as the chains mentioned earlier, many populations will be left without convenient access to necessary products.

Conclusion

Existing and proposed bans for single-use plastics throughout the United States focus primarily on the environmental implications of plastics, ignoring environmental justice as a key factor for successful implementation and acceptance. As we have seen, these blind policies have the most negative impacts on historically marginalized communities, fueling ableist and classist ideals in the environmental movement. It is not a popular notion to advocate against plastic bans because of their undeniable impact on the future of the climate, but it is a position that must be understood to make fully informed decisions about SUPs. The implications that such policies will have on the social groups mentioned in the paper must be addressed so that creative solutions to mitigate these effects can be explored further.

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