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## **Recycled Warriors Project: The Afterlife of Plastics**

### **The Recycled Warriors Project and the key concepts that it seeks to outline:**

*The Recycled Warriors Project seeks to implement creative and inventive ways of artmaking by utilizing materials entirely comprised of recycled plastic, such as straws, plastic bottles, and plastic bags. This project aims to highlight the imminent threats that humankind faces as a result of rampant overconsumption of such materials in a way that is creative, engaging, and reaches a broad audience, while also alluding to the environmental protectors/ warriors/ advocates that fight for the environment every day.*

### **A theoretical approach to art as a catalyst for social change**

Art is a form of expression that speaks to many. Involving issues with sustainability and environmentalism, the creative approach becomes immensely important to interdisciplinary discussion and understanding. Art speaks on a level that not just scientists understand, which is why it is such an utterly important and rich medium to utilize in the conversations encircling environmental issues. Plastic waste is an issue that impacts the environment and humankind directly: poisoning waterways, decimating marine life, and contributing to social injustice. The appropriation of such material, therefore, speaks volumes in works of art. One example of artists re-appropriating a material to shed light on environmental issues is Canadian artist Aurora Robson. Robson uses bottles and water-based, low VOC paints to create ethereal, amorphous shapes that twist and bend organically. Her work is not only visually stunning, but is

done on the basis of environmentalism, as Robson herself is an environmental activist who wants to draw attention to the overconsumption of plastic. “It’s a wonderful opportunity to give people space to reflect on their behavior and on their relationship to matter and material that they come across in their daily lives,” says Robson (Laylin). Robson “wants her art to help people recognize the power they have to make positive choices as consumers to use less wasteful products” (Laylin).

Another artist notable for their appropriation of waste material is Vik Muniz, who hopes to “give a louder voice to the unheard” (Wasteland). Vik Muniz travelled to the world’s largest landfill at the time: Jardim Gramacho, located on the outskirts of Rio de Janeiro. This landfill accounted for 70 percent of all garbage produced in Rio. Muniz worked with the ‘catadores’ (recyclables-pickers), to create works of art that reflected the people as individuals, while using the very material waste that they worked with every day. “We support ourselves with this material, and we managed to transform this material into art,” said one of the catadores who worked with Muniz (Wasteland 1:25:47). In Muniz’s case, the material served to highlight both patterns of overconsumption and social justice issues (Wasteland).

Art is not always a sustainable practice. There are countless theoretical discussions that encompass art and ethics: do artists have a responsibility to make art that is moral? Is there a subsequent obligation that artists have to create art that is sustainable? Damian Hirst is one such example of artists that encapsulates a complete disregard for the environmental impacts of his works. One of his pieces, entitled ‘The Physical Impossibility of Death in the Mind of Someone Living,’ was created in 1991 and consists of a dead shark suspended in a massive tank of formaldehyde. Not only is this large volume of formaldehyde alarming in an environmental

sense, but the work in itself is unsustainable. Once installed, the shark and formaldehyde had to be replaced, on account of the first shark rotting too quickly. Since its creation in 1991, it has deteriorated once more. This is not Hirst's first use of unsustainable means to create works of art: he also creates mosaics out of thousands of butterflies that he harvested, which too have since decayed, and created an exhibit with large butterfly rooms wherein 9,000 butterflies perished from being stepped on or brushed off of clothing. Upon hearing of this, the chief executive of Butterfly Conservation, Dr. Martin Warren, said: "this work represents a throwaway approach to living creatures and encourages a lack of respect for the environment" (Nikkhah).

There has been much debate about morality and art. There is no obligation to make art for the sake of sustainability; however, the idea here is to maintain a mindfulness of your work and the impact that your materials have. According to Christopher Crouch, "there is a need to consider how transitioning from an unsustainable culture of planned obsolescence to a sustainable one involves re-conceptualizing the role of making art, and thinking about art and its purposes" (17). Regardless to whether or not you are making art for the sake of environmental advocacy, it is still necessary to make your art in a way that is environmentally conscious. In essence, an artist cannot truly master their own work if they remain utterly incognizant of the afterlife of their product.

# Social and Environmental Impacts of Plastic

The first fully synthetic plastic was introduced in 1898 by Leo Baekeland, and its uses and prevalence in modern culture has since multiplied exponentially (Freinkel). As Susan Freinkel wrote, “plastics freed us from the confines of the natural world, from the material constraints and limited supplies that had long bounded human activity”. The curious thing about plastics is that, even though we have been producing and utilizing them for over a century, we still know very little about the implications. Within the past few years, it was discovered that microbeads pose a threat to water systems. Recently, it was also discovered that microfibers have negative implications as well, insofar that the fibers are introduced to the hydrosphere when washed. Of course, we have known for 20 years that there is a giant ‘vortex’ of plastic cycling through the Pacific Gyres. The issue remains that plastic does not break down, necessarily – it simply weathers into smaller and smaller pieces until it becomes classified as ‘microplastics.’ As scientists are realizing the gravity of this situation and what it means for marine ecology, more studies are being conducted that actualize the many ways in which plastic (and our overconsumption of it) is destroying the environment (Avio 1). This environmental degradation has, to some extent, been aided by massive overconsumption, and compiled with issues of environmental justice. Water is contaminated and exploited by corporations seeking to commodify water, via use of plastic bottles and containers. Only in recent years has research on the extensive plastic pollution and consumption begun to develop and progress. As this research progresses further, it will give some insight to the inexorable consequences of anthropogenic creation and negligent waste of plastic.

## **The environmental implications of Plastics**

A massive vortex of plastics, in varying stages of decomposition, was discovered 20 years ago in the Pacific Ocean. It was dubbed the North Pacific Garbage Patch, and since its discovery, four more masses of synthetic plastics have been found in the North Atlantic, South Atlantic, South Indian, and South Pacific. Yet another patch is also predicted to occur in the Barents Sea. In the North Pacific patch alone, there is estimated to be a minimum accumulation of 21.290 tons of plastic debris – and this number only accounts for that which is floating on the surface of the water (Avio 2). In total, researchers have estimated a minimum of 5.25 trillion particles that are floating in the world's oceans, weighing in at 268.940 tons (Avio 2). It is approximated that “60-80% of the world's litter is in form of plastic, and almost 10% of the annual production ends up into the oceans, where degradation of plastic objects can take several hundred years” (Avio 1). It is not, however, simply the sheer volume of synthetic plastics in the Ocean that is alarming – it is the threat that these plastics invoke among ecosystems. The introduction of such massive quantities of plastic to marine communities incites “adverse biological and ecological effects which, according to last conservative estimates from UNEP, would cause an overall economic damage to marine ecosystems of \$13 billion each year” (Avio 1). Additionally, because humans are intrinsically tied to their environment (regardless of their efforts to seem otherwise), this threat directly compromises human health as well.

In 2012, it was determined that at least “663 marine species experience adverse effects from interaction with plastic” (Avio 4). These interactions include entanglement, ingestion, and exposure to chemicals. In the Pacific, overwhelming amounts of marine animals have been

found to contain plastic particles in their bodies, including species of fish, squid, turtles, lobster, crabs, seals, filter feeding bivalves, and many more. According to Cathy Pyrek in her review of *Plastic Paradise: The Great Pacific Garbage Patch*, “nearly all of the 1.5 million albatross that inhabit Midway have plastic in their digestive systems” (Pyrek 269). Many of these birds perish due to starvation, as their stomachs become filled with plastic material. This material is given to young by parents, mistaking the abundant plastics for food, and is later consumed by the birds via fish that have also ingested the plastic particles. Filter feeders, too, are unable to break down the small plastic particles, so small plastic fragments become lodged in their filters, unable to decompose. Turtles consume plastic bags, mistaking them for the jellyfish that they would typically consume.

A key concern associated with plastic ingestion is trophic transfer and bio-magnification: “absorption of microplastics by organisms from the primary trophic level, e.g. phytoplankton and zooplankton, could be a pathway for transfer into the food chain” (Avio 4). Animals higher up in the food chain, in this case, become more susceptible to plastic ingestion via other organisms. Rather than directly consuming the plastic themselves, they ingest other organisms that have consumed it, gaining and accumulating all of the plastic that was consumed by other organisms in their own body.

Another implication of plastic pollution in the ocean is the unintentional transport of “non-native or pathogen species to new habitats on floating plastic debris” (Avio 5). This trans-oceanic contamination is enabled by wind currents and the ocean’s thermohaline circulation, creating a network of circulating water that spans the entire globe. Such transportation of both large plastic particles and microplastics introduces foreign species, chemicals, and biological

toxins into the food chain, acting as “a vector for alien species” (Avio 5). Due to a lack of sufficient research at present, there is little knowledge of precisely what consequences this will bring. As was stated in *Plastics And Microplastics In The Oceans: From Emerging Pollutants To Emerged Threat*, “anthropogenic polymers have created a new pelagic habitat for microorganisms and invertebrates. The ecological ramifications of this phenomenon for species dispersal, ocean productivity, palatability and trophic transfer of microplastics in food webs, degradation and leaching of plastic-associated pollutants, remain an open field of research” (Avio 5).

It is important to note that, depending on the chemical makeup of a given plastic, only a fraction of plastics can be found in the top of the water column. Much more plastic is left unseen, settled lower in the water column or at the very bottom, mingling with ocean sediments and benthic organisms. As plastics are introduced to the ocean, “their environmental fate primarily depends on the polymer density, which influences buoyancy, position in the water column and the consequent possibility to interact with biota. Polymers denser than seawater (like PVC) will sink, while those with lower density (e.g. PE and PP) will tend to float in water column” (Tooley, Avio 2). Degradation is also a factor to consider. The plastic makeup of the Pacific Garbage patches, for example, consists largely of a plastic sludge rather than a conglomerate of intact items. This sludge consists of microplastics, introduced to the ecosystem via such things as cosmetics and microfibers (particles of clothing that enter the hydrosphere when washed), or through the fragmentation of larger particles of plastic as they degrade. Microplastics are particles with a grain size lower than 5 mm, which enables them to infiltrate the food chain at the primary trophic level (Avio 2). As the plastic degrades, it also releases

chemicals into the water, posing a potential threat for humans and marine biota alike. Dioxin and Bisphenol A are just two known carcinogens that are released from plastic when introduced to heat, in addition to any other chemical additives that have been incorporated into the material (Kahn). Because these chemicals seep into the ecosystem and the food chain in a way this is visually undetectable, humans are at a risk for consumption of these chemicals, whereas it may be easier to avoid ingesting physical pieces of plastic particles. Pyrek draws attention to this issue, outlining the prevalence of fish in global food systems:

Fish are an important food source for the entire world, including both humans and birds. Like the albatross, many of the ocean's fish are burdened with guts full of plastic, with some pieces very tiny and others, surprisingly, not so small. The obvious point to consider is the food chain. Fish eat plastic, birds eat fish; therefore, birds eat plastic... and even if we are able to avoid directly ingesting this material, the plastic particles, we are still ingesting the chemicals that are leached from decomposing plastic matter (269).

### **Plastic and issues with social justice**

Plastic has introduced new means of discrimination and exploitation around the world. The catadores of the Jardim Gramacho landfill in Rio, for example, were subject to poor living conditions, minimal pay, dangerous and unsanitary work conditions, and exposure to disease and bacteria. However, they turned to this work because they could be proud of what that they did – collecting recyclable materials. They wanted to do honest work, rather than turning to drug-dealing or prostitution. These people are out with bins collecting “whatever the market demands at any given time” (Wasteland). However, it is because of other people's consumeristic tendencies and a lack of recycling efforts that the catadores did this form of

unregulated work in poor conditions. Moreover, the fumes and chemicals from this massive garbage heap were leaching directly into the ocean and the air, contaminating the very environment in which they lived and breathed.

Water commodification is an issue closely intertwined with plastic production/consumption and social justice. A common practice among water bottling corporations is the exploitation of a region for free water that is then sold to people at a profit. Nestle has been notorious for this, among other companies such as Pepsi and Coca Cola. Being one of the largest proffitters from bottled water, Nestle conducts mining operations in rural towns where they extract the water for free, and distribute it elsewhere at a profit (Tapped). In 2008 alone Nestle made 3.6 billion off of water sales. In one location in Michigan, Nestlé's mining operation was pulling out 1.8 million dollars a day, tapping from local resources. In North Carolina, regardless of drought, water mining operations continued by Pepsi Cola (Tapped). Despite there being severe water restrictions for locals, there were no restrictions in place for corporations. According to the UN, it would require an estimated 30 billion dollars a year to provide "safe, clean drinking water to the entire planet" (Flow 38:43). Though this number may seem daunting, Americans spend 3 times that amount purchasing bottled water, and yet there are still many people who go without clean drinking water because they can't afford it for themselves. As was stated in the documentary *Flow*, "it's not a democrat issue, it's not a republican issue; it's a people issue" (Flow 1:11:30).

There has been an overwhelming prioritization of profit over people. Pepsi and Cola have set up plants in areas such as India, where they both take the water from the already limited resources of the people, and pollute that which they do not take. This exploitation is

rooted in environmental racism and injustice, and is enabled by the patent plastic bottle that is so pervasive in today's culture and society (Flow).

### **Downfalls of Recycling, Fossil Fuel Dependence, and Overconsumption**

Plastic is an oil-based polymer that thrives on capitalism and consumerism. It is a material that can serve many purposes and was created for practicality, but has since been hijacked by corporations to feed their own financial endeavors, regardless of necessity (Freinkel). Recycling, too, was born from oil, and has since evolved to combat that which plastic has come to embody:

The English word 'recycling' is first documented in 1926, originally employed as a technical term in oil refining and related industrial procedures. It took on its contemporary sense, of gathering reusable items of domestic trash for reuse, only in the 1960s – as part of a broader ecological awakening, a growing consciousness of the wastefulness and destructiveness of consumer economy, and a moral commitment to moving towards an industrial system based on principles of ecological sustainability (Graeber 281)

Despite the hope for recycling to be employed as a method of environmental responsibility and stewardship, there are still many flaws with the system that have yet to be addressed. Every year, there are still large quantities of virgin plastic being manufactured from petrochemicals (Pyrek 270). Additionally, people do not always recycle what they can. In fact, because of the massive throw-away culture that plastics engender, Americans trash over 28.5 million tons of plastic annually. Though this is only roughly 65-70 percent of all plastics annually produced (the

other 30-some percent manages to get recycled) the sheer number of unnecessary plastic waste is astounding (Kahn). Because plastic is so cheap and readily available, it becomes easy to understand the material as infinite. There is, however, a definite limit to plastic production, and it is paired with the finite amount of oil within the earth that is being rapidly mined and depleted. In the words of David Graeber, “consumer economies have increasingly encouraged us to see material objects as disposable, or to create them in such a way that they do break down and need to be disposed of, in order to answer the need to continually expand production.” (284). Recycling itself does not necessarily mean what it insinuates – the material being recreated is generally less chemically stable and has less value as an object. This would be better described as down cycling, since the material is losing value as it progresses through this system (Waste=Food). Moreover, added energy inputs (likely fossil fuel) is used to process and remake/reform the plastic material. It is important to stress that this is not a call for the abolition of recycling: it is simply a reminder that the current system of recycling is not the solution, and cannot be considered a scapegoat for overconsumption.

Convenience is key when it comes to the pervasiveness of plastics. Objects that can be used and discarded create a sense of detachment and ease that permeates societal norms of continual consumption and the mindset of infinite availability. Straws are perhaps one of the best examples of such casual and unnecessary consumption: they are used for a single meal for about an hour before being thrown away. Their use is so engrained in American culture, this practice has become acceptable and even typical. Every day, Americans use and dispose of an estimated 500 million straws. Plastic shopping bags showcase this throw-away culture as well, typically only used for “an average of just 12 minutes before being thrown away” (Kahn).

Worldwide, more than 500 billion bags are used and discarded. This could be alleviated by the use of reusable bags, but again the wall of convenience becomes apparent in present culture.

Plastic bottles are an environmental hazard that remain unnecessary, but yet are incredibly pervasive in today's society. In 2007 alone, Americans bought more than 29 billion bottles of water (Tapped). The industry itself is worth 400 billion dollars globally, with 100 billion dollars being spent annually on bottled water by the populous. Studies found that 75 percent of the American population consumes bottled water, and a fifth of that percentage drinks exclusively bottled water (Flow 34:44-37:30).

What is it that is so desirable about water in disposable bottles? As was previously noted, convenience plays a large role, and the convenient plastic bottle has been marketed to people as a 'need,' so that corporations may profit off of a resource that they appropriated at no cost to themselves. A brilliant business scheme for those profiting, but a hazard in every other sense. The logic to consuming bottled water is inconsistent in health and convenience. Curiously enough, bottled water is actually significantly less regulated than tap water, so the safety involved with drinking bottled water is fairly minimal, if not nonexistent (Flow). Additionally, what is consumed for the sake of convenience will someday contribute to further issues of health and environmental degradation, creating a very inconvenient atmosphere in which to inhabit. Bottled water is so inexorably tied up in profits and manipulation that it becomes a very dangerous product indeed, both for the sake of people and the planet.

**Environmental warriors: advocates for the planet and environmental justice.**

With this, the conversation comes full circle. The Recycled Warriors Project was designed to highlight the issues discussed prior, ranging from environmental degradation to social inequalities and a society run by rampant overconsumption. It does this in a way that stands out visually, compelling onlookers to interact and ask questions. While many may not read this paper, it is my hope that I can reach individuals through my associated artwork in a way that will make them stop and consider their own consumption behaviors.

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