

Uncharismatic Waste: Addressing Barriers to Visibility of E-waste

Written Guide To Capstone Documentary

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The Big Picture

Waste is an inescapable part of life and when populations become more concentrated, strategies need to be developed and implemented to combat problems that arise from an increase in concentration of waste. With these problems, social movements have arisen using a variety of tactics to confront waste streams of commodity chains – plastic and electronic waste (e-waste). Post-industrialized countries are chief consumers of plastics and e-goods, and as such contribute significantly to these waste streams. This has made the waste-streams nonpoint source pollutants in that there are many contributors and there is no concentrated source, making it a difficult issue to address. This means that consumers are also contributing to this problem, not just the companies producing and disposing of plastics and e-waste.

Perhaps one of the most talked about and most acted upon waste at this moment in time is plastics. This waste source has presented a multitude of problems due to the fact that it is a persistent material that does not biodegrade. The typical narrative for countries bordering oceans is that plastics are disposed into landfills and barges, but inevitably some of those plastics escape containment and end up accumulating into gyres in the ocean. Plastic then disseminates across the Pacific, slowly collecting on coastal beaches and causing health problems for the biota in those environments, while also impacting the aesthetic value of beaches (Vannela 2012). Social movements that have arisen in response to these issues have utilized tactics to raise awareness around these issues. One in particular was the process of making plastics somehow *charismatic* - something “that exercises a compelling charm that inspires devotion in others” (New Oxford American Dictionary). A strategy used by many environmental movements, especially for conservation, is the usage of charismatic megafauna or flagship species. Here are definitions:

“Popular, charismatic that serve as symbols and rallying points to stimulate conservation awareness and action. At the larger scale these include animals such as condors, pandas, rhinos, large cats and large primates, while at the smaller scale they include orchids...Flagship species may serve as both indicators and/or umbrella species and also

provide a highly visible reminder of the progress of a particular conservation management plan.” (Heywood, pg. 491, 1995).

“The focus on species in conservation has largely centred on vertebrates, especially birds and large mammals. They are visible, dominant parts of our natural environment, and, for better or for worse, extract more sympathy from the public than do most plants or insects. These flagship or charismatic species draw financial support more easily..., and by doing so serve to protect habitat and other species under that of their large habitat requirements (Meffe and Carroll, pg. 80, 1997).

“A species that has become a symbol and leading element of an entire conservation campaign (Simberloff, pg. 250, 1998).

In particular, the movement to ban plastic bags has utilized charismatic megafauna in its campaigns such as Rise above Plastics by the [Surfrider Foundation](#) (Fig. 1) and [Mediterranean Association to Save the Sea Turtles](#) (Fig. 2).



Fig.1 - A poster made by the Surfrider foundation for the RAP’s campaign.

(<http://www.surfrider.org/coastal-blog/entry/new-rise-above-plastics-print-psas-from-pollinate>)

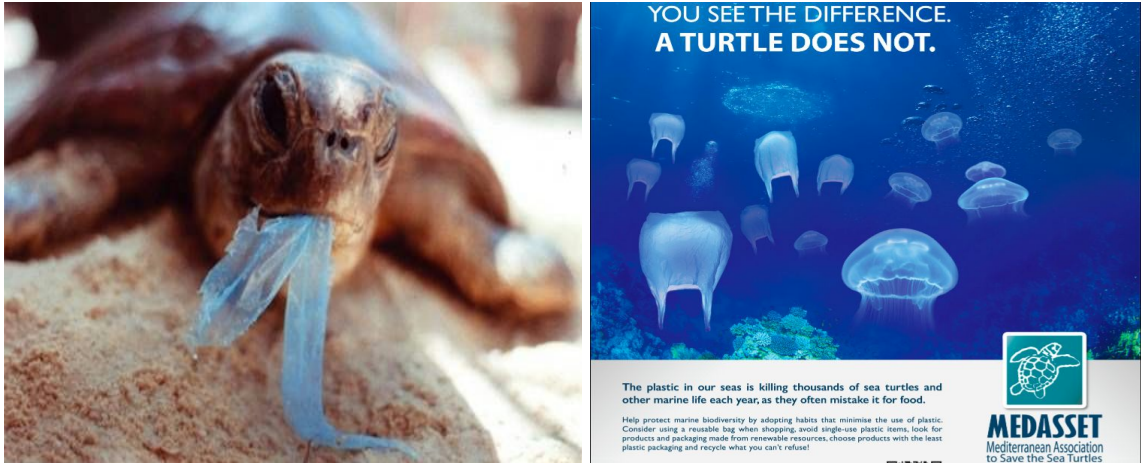


Fig. 2 - Images and poster used by the MEDASSET, to promote awareness about plastic pollution in relation to the preservation of sea turtles. (<http://www.medasset.org/current/>)

In Fig. 1 they show an albatross skeleton with plastic in its stomach. In Fig. 2 there is a baby turtle choking on a plastic bag, alongside an image of plastic bags that resemble jellyfish in the ocean. Both of these images are striking in that there is a mixing of objects that do not appear together “naturally,” which makes people engage with plastic bags in a new context. It also features charismatic species being severely affected by the problem of plastic pollution. The charismatic megafauna serves as an emotional platform for people to really visualize the unseen. These images are used frequently in campaigns, and are used to fuel plastic bag bans in their aim to reduce the amount of plastics going into the ocean (Tough 2007). This has been a common policy tactic that social movements use to address the problem of plastic pollution. It is effective in gathering support since it is an easier transition for people to phase out their plastic bags for reusable bags. It also gives people the opportunity to feel like they are saving the animals and beaches. Here, social movements such as the Surfrider Foundation embrace a tactic of behavioral changes, and that every little action will get us closer to a goal, which will hopefully result in policy change (Clapp and Swanston 2009).

E-waste, another significant waste source created from our obsession with laptop computers, cellphones, gadgets, etc. is increasing with every passing year. With each new Apple iPhone and Samsung Galaxy, their old counterparts go into landfills which are then exported to

third world countries and present very large problems with toxicity to those people. There have been environmental justice movements that have arisen against these waste streams trying to address this such as Greenpeace (www.greenpeace.org), the Basel Action Network (www.ban.org), and the Silicon Valley Toxics Coalition (www.svtc.org) (Robinson 2009). However, it has become very apparent today that it is not discussed in public discourse as much as plastic pollution is. Unlike the plastic bag movement, e-waste has had little advertising to the general public with regard to its effects. In a way it is uncharismatic in the way that it isn't associated with a charismatic species such as plastics, and has failed to garner any sort of the emotional support that plastic pollution activism has. Another uncharismatic quality lies in its appearance, where phones and laptops don't appear as the prototypical trash in the same way that plastic bags or plastic bottles do.

Why are people mobilizing against plastics but not necessarily e-waste? Perhaps people are more willing to give up their plastic bags than their iPhones, which are very integrated into our everyday lives. Once the technology is discarded, it is out of sight, and out of mind. This lack of awareness is a problem that social movements face, and to be successful, movements need to find different ways to engage with this mode of thought.

A big contributor for social movements is the way they frame the narrative of these waste streams. An effective tool for these movements is art, and in particular visual images. However, art is a double edged sword in that it can be used to foster awareness, but also it can create illusions. For businesses trying to push products, they use advertisements that utilize art as a distraction from problematic narratives – emphasizing values of “new,” “improved,” and “progress,” etc. Companies can use art as mystification by creating a narrative that appeals to people (i.e. bags that are biodegradable), but that do not confront our throwaway culture and continue the status quo (McAllister 2011). Art can also be problematic even for social movements against these waste streams, as they could be too alarmist, and capitalize on our feelings of guilt and fear to incite action. However, this could result in people trying to avoid these images, and even become numb to them if seen too often (Heddon and Mackey 2012).

These are problems that social movements around e-waste face. These social movements are always trying to find new ways to engage the public within this capitalistic consumer society, and ultimately fight for new policies to change the problematic waste streams of plastic and e-waste. These are the questions that I explore in this capstone project: What are factors that are contributing to invisibility of e-waste to the general public? In what ways (political, social, artistic, infrastructural) can we revamp the conversation? I will do this by breaking down the subject of e-waste by scale - international, the national, the state and city, as well as the individual level. You will see that the mobilization around e-waste is complicated and is present at some scales but not in others. I argue that this is the result of not only the complexity of the management at different scales, but also market and social systems that have caused us to consume at a rate that feeds into the issues around the disposal of e-waste.

International Scale: The Basel Convention

There is a rapid growth in the use of technologies in our everyday lives that is driving e-waste production, with 5 billion computers projected to be retired in 5 years (Robinson 2009). The global level of production, consumption and recycling induces large flows of substances that are both toxic and valuable. This also includes the transboundary movement from post-industrial countries such as the United States and Europe to industrializing countries such as India, China and South Africa (Widmer 2005), leading to conditions as described in a report by Robinson:

“Aerial contamination with dioxins at Guiyu has resulted in levels of human exposure some 15–56 times the WHO recommended maximum intake. Elevated levels of dioxins were found in human milk, placentas and hair, indicating that dioxins are being taken up by humans, from the air, water, or foodstuffs, at sufficient levels to pose a serious health risk.” (Robinson, pg. 188, 2009).

A big issue with disposal of these materials is that they are allocated to places away from the sight of the consumers, such as e-waste being allocated to industrializing countries for processing and disposal. Most e-waste is disposed in landfills. Effective reprocessing technology, which recovers the valuable materials with minimal environmental impact, is expensive. There

are inherent inequalities of who is affected by these pollutants of these waste streams, where countries that generate less of this waste (poorer industrializing countries) are receiving the highest impact of toxicity because they are the sites where disposal is located. However responses to these problems have arisen in the forms of governmental policy and organizations as well as social movements pushing for policy change.

Perhaps one of the most important pieces of policy dealing with e-waste was an international policy called the [Basel Convention on Transboundary Movements of Hazardous Wastes and Their Disposal](#). This was adopted on March 22, 1989 in Basel, Switzerland in response to the findings of toxic conditions in Guiyu during the 1980's. It provides a legal framework on how to manage e-waste at the international level to reduce hazardous waste generation, restrict transboundary movements of hazardous wastes (except if it is managed environmentally responsibly), and establish a regulatory system that would apply to cases where transboundary movements are permissible. The basic function of the Basel Convention is that it provides general provisions to States that sign onto this agreement to observe "fundamental principles of environmentally sound waste management" (Article 4 Basel Convention). Another provision of the Basel Convention includes the ban of hazardous waste export to Antarctica, to a State not associated with the Basel Convention, and to a State having banned the import of hazardous wastes. Transboundary movements of hazardous wastes are only allowed through bilateral or multilateral agreements between two parties, where detailed information has to be provided about that movement and most of all where that movement will be disposed. The only way of enforcement through this agreement is through public reporting with forms that can be filled out to file a complaint. The responsibility of punishments is the responsibility of each individual state that has ratified this convention. Due to the nature of the Basel convention (a ratified agreement that is not binding), this does not entirely stop all countries exporting unknown quantities of e-waste to poor countries, where recycling techniques include burning and dissolution in strong acids with few measures to protect human health and the environment (Robinson 2009). Another big issue regarding this piece of international policy is that it was not

ratified by the United States, one of the biggest producers of e-waste in the world. Without full participation, the Basel Convention will not be able to address problematic transboundary movement, as well as unsound management of e-waste.

National Scale: E-waste and United States Policy

On the national scale (pertaining to the United States of America) there is no all-encompassing, standardized law specifically focused on the management of e-waste. There are however overarching environmental policies that pertain to hazardous waste such as the Resource and Reclamation Act ([RCRA](#)), signed by Congress in 1976. It is regulated by the Environmental Protection Agency. It is a federal statute that regulates municipal and industrial solid waste, with these goals in mind:

- Protect human health and environment from potential hazards of waste disposal
- Conserve energy and natural resources
- Reduce amount of waste generated
- Ensure wastes are managed in an environmentally sound manner

It is regarded as a “cradle to grave” type of policy where waste is regulated from storage, transport and disposal applying to solid waste and hazardous waste. A solid waste is defined as, “any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material including solid, liquid, semisolid or contained gaseous material...”([42 USC section 261.2 of RCRA](#)). Hazardous waste is defined as, “a solid waste... which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause an increase in mortality...or (B) pose a substantial hazard to human health or the environment when improperly treated stored, transported...” ([42 USC section 261.3 of RCRA](#)). With regard to e-waste which contains materials that have hazardous qualities to human health such as cadmium, cobalt, chromium, copper, nickel, lead, and zinc. This would deem e-waste to be classified as a hazardous waste, and would be regulated by RCRA, however there are exemptions as shown in Fig. 3., which shows that waste that is disposed by households is exempt from regulation of RCRA. The majority of e-waste materials

are disposed of through households, making the RCRA law not a viable route to deal with the ever rising volume of e-waste.



Figure 3. - This diagram shows the statutory definitions of solid waste, and hazardous waste and shows the the pathways of whether or not a waste is regulated by RCRA.

With RCRA not a viable route to tackle responsible management of e-waste, another initiative was created called the National Product Stewardship Institute ([NPSI](#)). NPSI is a non-profit member-based organization that also looks to influence national policies surrounding e-waste management. They “take a unique product stewardship approach to solving waste management problems by encouraging product design changes and mediating multi-stakeholder dialogues. With 47 state environmental agency members, along with hundreds of local government members from coast to coast, and 95 corporate, business, academic, non-U.S. government, and organizational partners, we work to promote product stewardship across North America” ([NPSI](#)). Figure 4. shows NPSI’s map of extended producer responsibility (EPR) laws across the United States. It is revealing to see that e-waste policies resemble a patchwork where laws differ state to state. Scott Klag, a Senior Planner for the Portland Metro who was a lead on trying to get a national policy passed, told me in an interview that even though manufacturers

expressed dissatisfaction with the “patch-work” legislation, they ended up adapting to them, which brought national discussions of a standardized legislation to a halt. NPSI is still trying to find ways to work with this issue of non-standardization. This left e-waste management up to their respective states, which has left patchwork management across the nation in a stand-still.

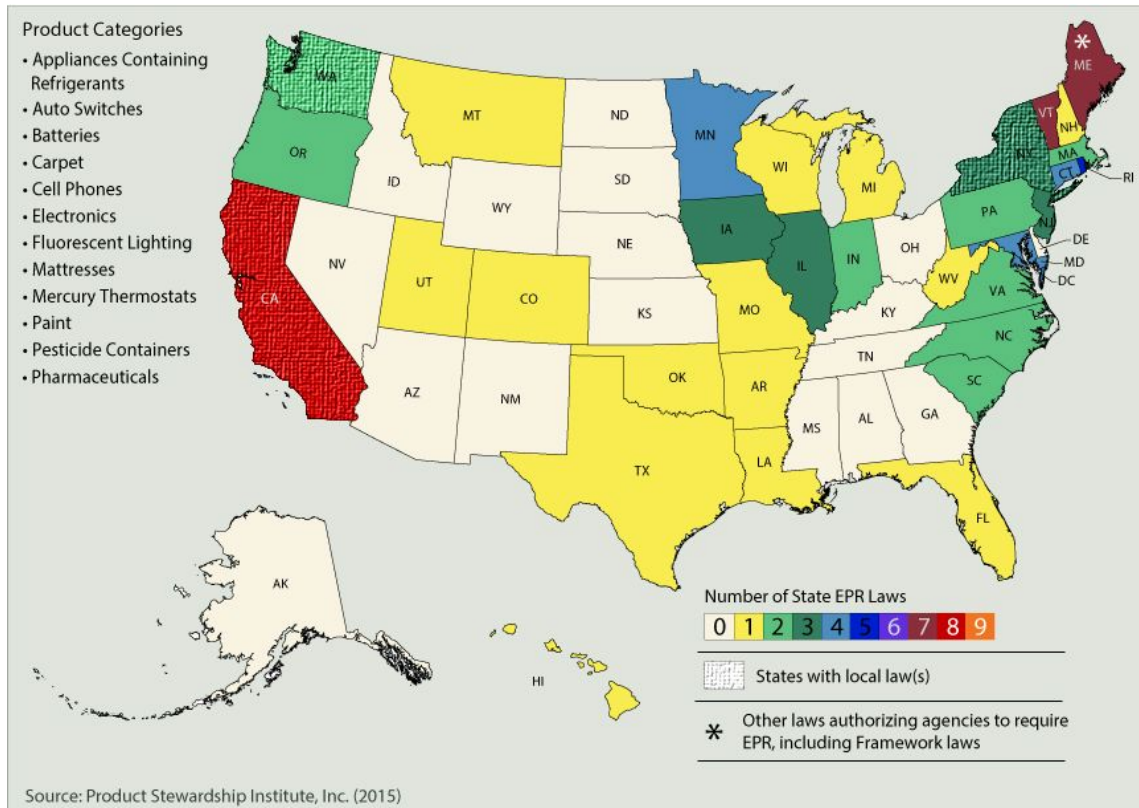


Fig. 4-“This map includes EPR laws that require manufacturers to finance the costs of recycling or safe disposal of their products. It does not include other laws that contribute to the appropriate management of products, such as beverage deposit laws, disposal bans and sale bans for products containing toxic materials, deposit fees that may be redeemed when the consumer recycles the product, policies requiring retailers to collect products for recycling, and policies requiring the purchase of environmentally preferable products.”
http://productstewardship.site-ym.com/?State_EPR_Laws_Map

State and City Scale: Oregon E-Cycles Program

The legislative history of e-waste is very recent and one that the Portland Metro took the lead on. A law called “Oregon’s Electronics Recycling Law” was adopted in 2007, and established a product stewardship program for electronic recycling. The program insured that

there would be sites that would be held accountable to responsibly process e-waste, which are called Oregon E-Cycles. The law specifically states that

“electronic manufacturers are required to provide free, convenient, statewide recycling for computers, monitors and TVs. Manufacturers whose covered devices are sold in or into Oregon must register their brands with DEQ (Department of Environmental Quality) and join either the state contractor recycling program or a manufacturer-run recycling program. These programs are funded by their participating manufacturers” ([Oregon E-Cycles Biennial Report](#), pg. 3, 2014).

This specifically makes industries responsible, and even specific brands are responsible for how e-waste is processed.

On January 1, 2010, there was an added statute that banned computers, monitors and TVs from disposal at solid waste disposal sites. In 2011 there were amendments added to the law that included printers and computer “peripherals” (keyboards, mice, and associated cords) to Oregon E-Cycles beginning January 2015. This was called SB 82, which also established a

“recycling credit system that allows recycling programs to claim the pounds they collect over their minimum recycling obligation in any year as recycling credits that can be sold or used in future years to meet up to 15 percent of a program’s minimum recycling obligation” ([Oregon E-Cycles Biennial Report](#), pg. 4, 2014).

There was also another addition to the law on June 21, 2012 by the Oregon Environmental Quality Commission that adopted rules that effectively revised the registration fees that electronics manufacturers pay to help cover DEQ’s costs for administering Oregon E-Cycles. Scott Klag, a Senior Planner at Portland Metro, ensures that there are 23 different laws that heavily regulate electronic manufacturers.

For this legislation surrounding e-waste in Portland in the state of Oregon, its biggest emphasis was increasing the burden on manufacturers to be responsible with the entire lifecycle of the devices they are making and distributing into the market. Here are the roles and programs that electronic manufacturers are involved in an effort to conform to the standards set by the

Oregon e-waste bill: Any manufacturer that partakes in electronic production has to be apart of firms that manage and keep manufacturers in compliance with Oregon e-waste regulations. These would be classified as State Contractor Programs where plans of responsible production and disposal of their devices have to be submitted and approved by the state. Another important aspect of the regulations put forth by the Oregon e-waste bill was that the brand would be held responsible, so even if a company were to go out of business they would still be responsible for the life-cycle of their products that they produced. Scott Klag of the Portland Metro called these “orphan products,” which incentivized companies to be diligent even when they go out of business.

An interesting part of this bill is that it is not only focused on the end cycle of electronics, but also with the production. It tries to influence companies to build devices with materials that are less toxic, have less material, and are more easily recycled. An organization that was originally started in Portland, Oregon called the Electronic Product Environmental Assessment Tool ([EPEAT](#)) has created a database that gives ratings to electronic products based on their recyclability, design, energy use, toxicology, etc. It was made to help people make decisions on products they should or should not purchase. EPEAT seems to be on board with NPSI’s national policy framework of not only influencing the “end-life” of the e-waste stream, but also on the design and production side of the stream.

The [Biennial Report](#) also provides a useful table (Table 1.) assessing the performance of this program through statistics provided by dismantlers and then promulgated by staff in the DEQ that oversees this program in the Oregon region. Looking at total recycled e-waste items, we see that there is a steady increase from 2009-2013 with 19 million lbs to 27.7 million lbs, almost a 10 million lb increase in 5 years. Pairing that with statistics that have actual collection amounts greater than statewide recycling goals are a promising sign that the program is catching on.

Table 1. Oregon E-Cycles Program Performance

	2009	2010	2011	2012	2013	Totals
Recycling / Reuse						
<i>Statewide recycling goal (millions of pounds)</i>	12.2	21.5	23	27	28.6	112.3
<i>Total recycled (millions of pounds)*</i>	19.0	24.2	25.9	28.1 ⁴	29.7 ⁵	123.5
<i>Per capita recycled (pounds)*⁶</i>	4.96	6.3	6.75	6.9	7.1	N/A
<i>Units reused*</i>	25,900	38,000	36,007	20,390	38,038	158,335
Recycling Programs						
<i>Recycling Plans</i>	3 mfr + 1 state	3 mfr + 1 state	3 mfr + 1 state	2 mfr + 1 state	2 mfr + 1 state	N/A
<i>Participating manufacturers</i>	176	162	169	160	155	N/A
Services						
<i>Collection sites</i>	~220	~240	~230	~282	~301	N/A
<i>Collection events</i>	22	17	13	8	18	N/A
<i>Recyclers</i>	6	6	8	6	6	N/A
Energy Savings / Greenhouse Gas Reductions						
<i>Energy savings (BTUs, in billions)</i>	290	370	390	400	420	1,870
<i>equivalent gallons of gas (millions)</i>	2	3	3	3	3	14
<i>GHG emissions reductions (MTCO_{2e})</i>	22,000	28,000	30,000	30,500	31,000	141,500
<i>equivalent tailpipe emissions cars/yr</i>	4,500	5,700	6,100	7,000	7,200	30,500

⁴ Actual collections in 2012 is 26.7 million (without using credits)

⁵ Actual collections in 2013 is 27.7 million (without using credits)

⁶ Based on actual collection totals

*Preliminary results as of January 15, 2014. Final results to be reported March 1, 2014

Table 1- Statistics collected by the Oregon DEQ

(<http://www.deq.state.or.us/lq/pubs/docs/ORECyclesBiennialReportLeg2014.pdf>)

However there are some things to consider when looking at these statistics. Scott Klag mentioned that the pounds of e-waste that are coming in will be reflective of the amount of people participating in the E-Cycles program. But as manufacturers are creating electronics that

are lighter, these numbers will likely start to decrease. Another a number to look at is the amount of units reused. The numbers for this category showed an immediate increase from the first to second year, however it seems to have remained steady except for the year 2012, where there was a sharp decrease. Klag emphasized that reuse should be emphasized in these programs as that saves much more money, and staves off the amount of waste coming in. A number that struck me when looking at this table was the amount of participating manufacturers decreasing over the years, which reflects that manufacturers are merging or going out of business. It is something to keep an eye out for in future years.

Scott Klag also discussed his view about Apple, a large electronics manufacturer that would seem to be able to navigate around these state regulations. Apple was an outsider due to the fact that most of its manufacturing does not occur in the United States, but rather in China. Apple does participate (has to by law) in the end of life-cycle part of the legislation as they handle returns and recycling of their computers, however not for their phones. For the phones they have third party re-sellers such as Ebay and BestBuy that refurbish them and sell them. This brings in the point that yes, state standards are important and can be effective in making local manufacturers pursue better ways to produce and dispose of e-waste, however for manufacturers like Apple, Samsung, etc. who have their plants in other states and countries, are not held as accountable in the same way as smaller local manufacturers. Perhaps laws like that in Oregon could be detrimental to these local manufacturers and actually encourage these manufacturers to export their manufacturing sites. This means that a standardized national policy and even an international policy (binding...which is always very, very difficult) would need to be put in place.

Zooming Onto the Individual

Policies are not the only factor that should be considered when looking at barriers of mobilizing around e-waste. We need to zoom in to the individual scale and look at our consumption of tech devices. To explore the consumption aspect of this, we look to David Harvey's "The Fetish of Technology: Causes and Consequences," which provides a great application of Marx's theory of Commodity Fetishism to our current technological market. It provides insight on a barrier against making real strides against mobilization surrounding the issue of e-waste handling, accumulation and distribution – our obsession/fetishism of the technological gadgets and products. Here Harvey provides a summary of how technology is incorporated into our capitalistic economy:

“Capitalists with superior technologies can expect to gain excess profits relative to the social average. This excess profit is likely to be ephemeral since other capitalists are free to adopt a similar technology. The general effect is to drive the average productivity in the industry up, and the average value of the commodity produced down. This corresponds with the experience that new commodities typically become relatively cheaper over time as productivity improves. Capitalists correctly infer that superior technology can be a source of excess profits to them individually, if only for a while...Profits always arise out of the social relation between capital and labor” (Harvey pg. 6-7, 2003).

Marx's coercive law of competition states the current situation for the market of technological products, where producers are creating “leapfrogging” innovations to yield temporary excess profits. The law also entails that: “Capitalist entrepreneurs and corporations innovate not because they want to but because they have to in order to either acquire (like Bill Gates or Steve Jobs) or retain (like General Motors) their status as capitalists” (Harvey, pg. 7, 2003).

Harvey also explains that consumers of these technologies are directly involved in this circle. Harvey calls consumers the “cyborg consumer” where people are completely hooked into the circulation of capital and its endless output of products. These cyborg consumers develop a lust for new, fashionable and sophisticated products. We see this with Apple and Android phones coming out every year, looking more and more sleek, with more functionalities, etc, etc. “The

production of this fetish is promoted directly through fantasy production, using advertising and other technologies of persuasion, in particular that aspect that reduces the consumer to a passive spectator of spectacle.” (Harvey, pg. 17, 2003). Just looking at the front pages of Apple (Fig. 5) and Android website (Fig. 6), we see what is truly front and center.

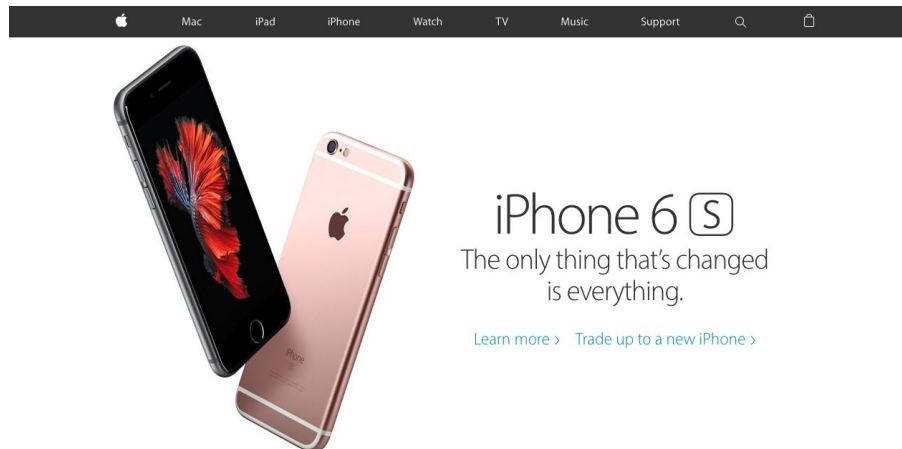


Fig. 5- Apple Website Front Page

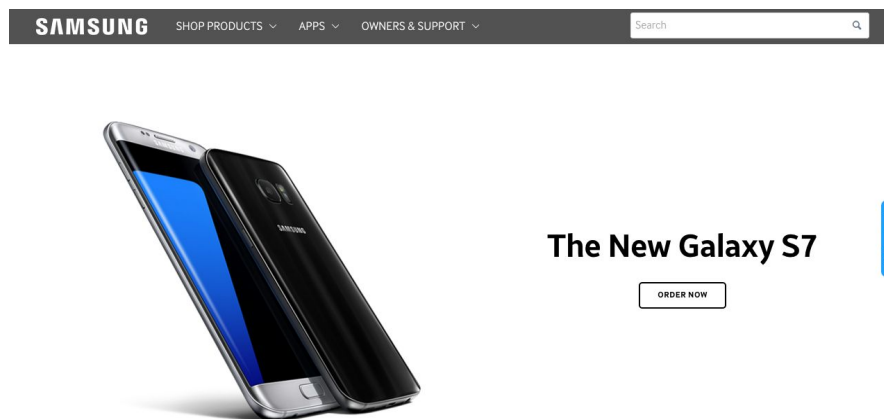


Fig. 6- Samsung Website Front Page

One of the most eye opening descriptions of the presentation of the electronic products is the emphasis on appearance. On Apple's website, the first image you see is the new Apple

iPhone 6s, where you see very aesthetically pleasing phones displaying qualities of shininess and curviness. It resembles [advertisements](#) that use models to entice attention of the viewer. The slogan says it all: “The only thing that’s changed is everything...Learn more...Trade up to a new iPhone.” The front-page advertisement is a perfect example of how companies are continually feeding into this leapfrogging innovation market, where they push people to consume the newest technology to create excess profit through advertisements and through the mass popularity of the brand. Of course these profits and newness is always ephemeral, which creates a loop to always create value through advertisements and marketing. Here Robert Goldman and Andrew Miller talk about how advertisements continue this cycle:

“As such, advertising constitutes a technological form for reproducing what Jean Baudrillard referred to as ‘the structural law of value,’ a stage of value construction that rests on referential fluidity. The matter, in a nutshell, is that value can no longer be considered a stable or durable entity: indeed, as Capital continues to mature, the half-life of ‘value’ becomes more and more fleeting, requiring that more value, new value, amplified value, be ceaselessly assembled to replace that which decays and falls out of orbit. In short, advertising is an institution charged with the task of conjuring up value semiotically, even though the process of accomplishing this simultaneously undermines this goal by contributing to a clutter of signs and values” (Goldman and Miller, pg. 2, 2013).

Goldman and Miller offer a view that reflects the overall picture of the advertisements for the Apple iPhone and the Samsung Galaxy, where both continually try to find new ways to reinvent themselves and seek value in a market that has seen their margins diminish.

In an interview with [Robert Goldman](#), a Professor of Sociology/Anthropology at Lewis & Clark, continues this narrative of how these goods turn from a proprietary good (a good that is copyrighted, or of its own), to a commodity. An example of this is when other brands enter a certain market like the smartphone. These brands, such as Samsung emulating the Apple iPhone, which once was a proprietary good and had wider margins, become saturated and the margins of value begins to diminish over time. Pointing the cursor back to the individual, Goldman talks about how we are moving this along with our consumption. He offers a term called “promiscuous consumption,” where consumption compensates us for what we are missing in our

other relationships. It offers a real convenience that could be satisfied by other means. But having said that, when you are in the grip of the “fad” or even something more ingrained not only by advertisements but by overall trends of technological integration with laptops being used in schools, voting with machines, etc. Our consumption overlaps with this, and even our identities mesh with this integration. It becomes a status, and with the offers of the new TV, phone, laptop, etc. it is a chance to advance ourselves socially. Technology, in a way, has become part of the normal.

Yet another theory from Marx that is relevant in this discussion of electronic consumption is the mechanization of labor. This is where labor becomes more and more mechanized, creating a distance from the knowledge of the craft/labor practice with the laborer (Marx 1848). This distance between people and the knowledge of production, applies to this situation of the cycle of consumption of electronics. It applies in that labor is becoming specialized, and even mechanized to the point where the majority of consumers have very little knowledge of the production process, and even how the product works. What if people possessed the full knowledge of production of computers, laptops, and phones? Would people be more inclined to create their own device, than buying the new Apple computer?

Bridging Policy and the Individual

The consumption aspect of the problems of dealing with e-waste seems to be a problem that is very ingrained into our market system, making it very difficult to try address this issue through individual behavioral change. A way to look at this is to bring together the existing systems with a mindset that is aware of how entrenched our lifestyles are by technological consumption, and how those technologies are disposed. A promising organization that aims to bring these together is [Free Geek in Portland Oregon](#).

Free Geek is a non-profit volunteer based organization that takes donations of electronic devices, processes them, and either sells them or donates them back to the community. It was

started in the year 2000 by self-proclaimed “geeks” to not only responsibly deal with e-waste, but also provide access to those technologies to people who simply do not have the means. They are one of 300 dismantlers under the Oregon E-Cycles initiative that carries out the regulations of the Oregon e-waste bill. There are two main programs that Free Geek implements which are the “Adoption program” and the “Build program.”

The Adoption program focuses on the direct dismantling process which is all carried out by volunteer labor. Here volunteers are involved in collecting donations and organizing them into different sections based off of electronic type. Volunteers literally just take all of these devices apart by hand, and then are sorted by their raw parts, such as a bin for the wires and cables, and shelves for bulk parts, etc. The Build program is an educational program that gets people to learn how to build and refurbish computers. There are classes that teach people how to use Linux, an operating system that can run nicely on old computers that are donated, to help extend the lifespan of older computers that cannot handle the new operating systems such as Windows 7 and above. There are also trainings and classes for people who want to get into the hardware, and actually build their own computers, and learn how to test whether or not a computer is functional or not. This is done through a test flow chart that was created by Free Geek to help volunteers determine whether or not a computer works or not. Free Geek also offers higher positions for people who complete these trainings to be advanced builders and builder instructors for not only PCs but also Mac computers.

In an interview with John Ashcraft, the director of Free Geek, he mentioned the *digital divide*, where it is harder and harder for people who do not have the means or the education to keep up with the advancement of technology and the utilization of it in everyday workspaces. It brings up a serious issue regarding the advancement of technology, the uses of it, and the increasing inequality that is being created by it. Over 300 volunteers a month have become involved with this message of giving back to the community, and trying to provide a service within the Oregon E-cycles program to dispose of e-waste. A big question to ask about this is

how can this be sustained? Ashcraft says that dismantlers, even with funding from the E-Cycles program, are affected by the steel and plastics market. Materials that are sold to recyclers, especially the plastics in e-waste, are in competition with the oil market. In the past year oil prices have been down, dwindling the market for recycled plastics. The thrift store that Free Geek has is a slight solution to these market forces that other dismantlers do not have the luxury for. This shows that it is very important to have diversified revenue streams as a dismantler to survive in a fluctuating market. The thrift store also offers a great solution to reuse tech that has been deemed e-waste, and to provide cheaper computers for people who do not have the means to access to these technologies.

Discussion

Overall we see there are many barriers to optimally deal with e-waste. We see that there is a lot of success within smaller scales such as the state and city scale where e-waste management systems and legislation are much easier to pass because it's more possible to cooperate with the businesses and enforce legislation within those borders. But what will keep that fire burning? Perhaps one of the biggest findings in my research was the power of the narrative. The narrative of the people in India and China facing extreme health issues because of the open burning of e-waste to recover metals was a horrific story that sparked movements to eventually achieve the signing of the Basel Convention, which in turn inspired other policy efforts around the world. Even though the US did not ratify this international agreement, the Basel Convention inspired management systems such as National Product Stewardship Institute and Oregon E-cycles. It is important to note that narratives are also ephemeral and need to be acted upon in an institutionalized way to affect lasting change. We also need to find ways to create new narratives as we are bombarded by advertising and market forces that make it difficult for dismantlers to sustain themselves.

There are also problems with scaling up successful state and city scale policies and management systems. With the patch-work policies, and the dividedness of Congress that Scott Klag mentioned, it is very difficult to apply the model provided by the Oregon E-cycles program to other states, and even to apply it as an overall national policy. This currently allows for “leakage,” where manufacturers and companies can jump to other states or countries to avoid regulations and enforcement. Perhaps one of the biggest barriers is the energy to keep pushing through to install a national policy around an all-encompassing e-waste management system. There is no simple solution, and in fact no solution is perfect. The point of this project is to show the many complexities of e-waste management at each scale, and how those scales interact with each other. Acknowledging these complexities will provide better insight into addressing the glaring problems of e-waste management. Moving forward, we need to take policy and management concerns into account in order to keep successful e-waste programs going given fluctuating market forces and patchwork legislation. We will also need to pay careful attention to which actors, uses, policies, and scales are involved. When we are able to realize that everything is dynamic, we can then begin to come up with dynamic solutions.

References:

Clapp, Jennifer, and Linda Swanston. 2009. “Doing Away with Plastic Shopping Bags: International Patterns of Norm Emergence and Policy Implementation.” *Environmental Politics* 18 (3): 315–332. doi:10.1080/09644010902823717.

Goldman, R., & Miller, A. (2013). “Searching for value in the wastelands of commodity fetishism”. *Fast Capitalism*, 10.

Harvey, David. 2003. *The Fetish of Technology: Causes and Consequences*: Macalester International: Vol. 13, Article 7. Available at: <http://digitalcommons.macalester.edu/macintl/vol13/iss1/7>

Heddon, D., and Mackey, S. 2012. “Environmentalism, performance and applications: uncertainties and emancipations”. *Research in Drama Education*, 17 (2). pp. 163-192. ISSN 1356-9783

Heywood, V.H. 1995. "Global Biodiversity Assessment". Cambridge University Press, Cambridge.

Marx, Karl, and Friedrich Engels. 2011. *The Communist Manifesto: (Penguin Classics Deluxe Edition)*. Penguin.

McAllister, Matthew P. 2011 "Consumer culture and new media: Commodity fetishism in the digital era." *Media Perspectives for the 21st Century*: 149-165.

Robinson, Brett H. 2009. "E-waste: An Assessment of Global Production and Environmental Impacts." *Science of The Total Environment* 408 (2) (December 20): 183–191. doi:10.1016/j.scitotenv.2009.09.044.

Simberloff D. 1998. "Flagships, umbrellas, and keystones: Is single-species management passe in the landscape era?". *Biological Conservation* 83, 247-257.

Tough, Rhian. "Plastic Shopping Bags: Environmental Impacts and Policy Options" (2007). <http://researcharchive.vuw.ac.nz/handle/10063/571>.

Vannela, Raveender. 2012. "Are We 'Digging Our Own Grave' Under the Oceans?" *Environmental Science & Technology* 46 (15) (August 7): 7932–7933.

Widmer, Rolf, Heidi Oswald-Krapf, Deepali Sinha-Khetriwal, Max Schnellmann, and Heinz Böni. "Global Perspectives on E-waste." *Environmental Impact Assessment Review* 25, no. 5 (July 2005): 436–458. doi:10.1016/j.eiar.2005.04.001.