Our Contrary Normal Practice and Normative Attitudes Around Plastics Recyclin

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Our normative behavior is thinking and professing that recycling is an environmentally effective strategy. However, the norm is to not recycle plastics. And we know it. Our contrary normal practice and normative attitudes around plastics recycling

In time for the 50th Anniversary of Earth Day, *Frontline,* an acclaimed investigative news show on American Public Television, is airing "Plastic Wars," a report on the fight over the future of plastics. "Plastic Wars" and its related print articles expose that plastics manufacturers have promoted the recycling industry as the clever, beneficial, circular end to plastics waste, all the while knowing that plastics recycling systems have never been robust enough to address plastics waste. It tells that soft drink companies like Pepsico have repeatedly fallen short of stated goals for recycled plastic content in their bottles. It clarifies that end-consumers should not expect that every plastic part embossed with a chasing arrow symbol will be recycled. These pieces of investigative journalism detail realities about recycling plastics that we citizens of the world have internalized, but don't verbalize. We know that plastics don't get recycled; that is the norm. Our normative behavior, however, is to promote and proselytize recycling; we say that recycling is important, worthwhile, beneficial and good. The norm and the normative in 2020's plastics recycling are opposites, and we've known that since long before *Frontline's* Earth Day expose.

Let's start at the beginning of a product's life. To design a new product with the admirable goal of environmental responsibility, there are generally two main strategies to consider: materials selection and waste minimization (Graedel, Lewis). Tactics of materials selection include choosing abundant materials, choosing materials that require minimal processing and choosing recyclable materials. Tactics of waste minimization include designing for increased durability and minimizing the impacts of disposal, including recycling. The strategies of materials selection and waste minimization both accept end-of-life recycling as an appropriate consideration in the design of a new product.

We designers embrace recyclable materials choice as a strategy in the design of plastic products. It tends to be an easy strategy to implement, as all materials are recycle-*able,* and the most widely used polymers are the most recycled. Declaring a recyclable material strategy for a new product is a relatively normal, typical consideration that allows designers to feel accomplishment that we have addressed environmental issues with new products. We do this even though we know that once the product has been produced, we have no control over whether the product actually is recycled, and we can even reference data that only 8% of consumer-used plastics are recycled. We feel good about our role, and claim no responsibility for the user's actions.

Designers can also quantitatively analyze a product's sustainability. There is a single-figure Life Cycle Assessment (LCA) tool called Okala that quantifies the environmental impacts of a product and product system. (White, et al, 2013).

For example, Okala gives impact figures for PET bottle material as 2.0 impact points per pound (ip/lb) for primary material, and 1.6 ip/lb for secondary (recycled) material.

The recycled material has a solid 20% reduction in environmental impact from the primary. Because the total impact for the bottle also includes the blow molding manufacturing process and the landfill end-of-life, a 0.02lb (9.9g) primary PET water bottle has a total impact of 0.061 Okala impact points, and a secondary PET water bottle has a total impact of 0.053 Okala impact points. The recycled material reduces the impact by about 13%. Congratulations to me! I can design for the product to be made with secondary PET, providing an increase in sustainability of 13% over the primary option. I'm not responsible for the manufacturer procuring recycled material, which may be difficult due to availability and price. I espouse recycled material design through my work, though I know the product outcome to again be out of my control.

As consumers, we put ourselves in the position of no responsibility for a product's materials or for waste outcomes. Using single-serving beverages as an example, the bottle material is the responsibility of the beverage manufacturer. The recycling system, including the disposal options for my bottles, is responsibility of my workplace and my municipality. In addition, providing me with potable beverage options is also the responsibility of my workplace and my municipality. My consumer behavior is to purchasing and use single-serving beverage bottles, which I justify as normal behavior. If there isn't a handy recycling receptacle for my used bottle, my normal behavior is to dispose of it as waste. Despite my purchase and disposal decisions, my normal behavior is to say in groups that recycling water bottles is important, but I would never hold myself or a friend accountable to that. Because of these internal dichotomies, I'm comfortable both saying that recycling is important, and not behaving as if it was important.

As local and global citizens, we haven't asked for standards of recycling plastics. There are some municipal systems that include curbside recycling of plastics, which is picked up with household and business waste. Some municipal systems sort recyclables out of garbage bins. Some municipalities don't offer curbside recycling, but recyclables can be taken to a sorting center by households and businesses directly. Sometimes, communities can only maintain garbage collection and disposal. There is no norm for recycling.

Recycling centers that do exist must be responsive to local government requirements, including the wise utilization of citizens' taxes. In my municipal system, plastics with numbers 1 and 2, which are polyethylene terephthalate (PET) and high density polyethylene (HDPE) respectively, are the only plastics recycled. PET is the plastic found in most single-use beverage bottles. PET and HDPE look and feel fairly different from each other, so they are relatively recognizable to workers who sort municipal recycled waste. Accepting only two plastics is a relatively efficient way to process the materials. And these two plastics are more valuable than others. There are buyers for these post-consumer recycled materials for use in beverage bottles and apparel fibers. The recycling center might be able to make some money on the sales of the collected, sorted plastics to maintain its operation. On a community level, we know that we are not recycling most of the plastic waste in our own area, yet we feel good about ourselves as a community with a sustainability-inclusive plan for recycling.

We value this behavior and support the normative story that we are good because we recycle and people who don't recycle are bad. Our knowledge that our plastics are waste popped up in art a decade ago. In 2007, artist Chris Jordan created a resonant photo collage in "Plastic Bottles." The piece is a digitally rendered landscape stretching to a distant horizon that is completely smothered by 2,000,000 plastic beverage bottles. This work is a part of Jordan's "Running the Numbers" series, and represents the quantity of beverage bottles used in the Unites States every five minutes (or every five minutes way back in 2007). This piece was an early digital meme, repetitively emailed and forwarded to friends and neighbors because it captured what we knew to be true, but couldn't observe, and wouldn't claim in our own actions.

Personal practices and business practices offer daily failings of our ability and motivation to recycle. In my most recent travel, my airline had a policy of recycling the plastic cups used on the flight. On the first leg of my trip, leftover ice and drinks were poured into a trash bag, and the used cups were stacked neatly. On the second leg, the cups were disposed of with the contents into the trash bag. Perhaps we were descending too rapidly or with turbulence on that second leg, so time couldn't be taken to sort for recycling. Regardless, my observation is that even with policies in place, recycling does not always happen. My normative practice includes both appreciating that my airline has a recycling policy, and not holding them accountable when their norm is more like a "sometimes recycling" policy. The research I conduct examines peoples' perceptions of product sustainability. The studies that I run consistently show that we do not actually perceive recyclability of a material to be an indicator of its sustainability. I give study participants sample objects to look at, feel, touch, smell, and place on a table, and ask them to rate the sustainability of the objects. The ratings are based on sustainability principles, including the durability, value, material accessibility and the recyclability. I use a statistical method called a multilevel confirmatory factor analysis to compare all of the participants responses to the objects they have, and to all of the responses that other participants give to the same object. Through the statistical analysis, sustainability principles that people use as the bases for their overall perception of the object are clumped together. To date, the factors that people consider the strongest indicators of a product's sustainability are the durability, the degradability, the naturalness and the rawness (Muenchinger, 2016).

Recyclability is included in the surveys, but statistically, recyclability is not being considered by people at all! These studies are another example that we profess to think recyclability is important, but our unconscious assessments deem recyclability to be unworthy of our consideration.

My research parallels *Frontline's* work, showing that plastics recycling isn't working and really has no support to be a successful solution to plastic pollution. While it is difficult to change behavior, particularly without intervention, we are all looking for things we can do to help the problem. Two actions you can take: use a portable, reusable beverage container (or two: one for hot, and one for cold) and don't purchase single serving beverages in bottles. Based on Chris Jordan's numbers, if I cut out the two single serving bottles I use per day, I will keep 14.5 pounds (6.5 kg) of plastics out of the seas and landscapes. I think I can shift my normative behavior, and profess through my behavior that the norm is not recycling, it is reducing.

Reference List

PBS. *"Plastic Wars." Frontline. (2020)*. Season 2020: Episode 14. https://www.pbs.org/wgbh/frontline/film/plastic-wars/.

Graedel, T.T., Allenby, B. R. (1995). *Industrial Ecology. Englewood* Cliffs, NJ: Prentice-Hall.

Jordan, Chris. (2007). http://www.chrisjordan.com/gallery/rtn/#plastic-bottles.

Lewis, H., Gertsakis, J. (2001). *Design + Environment: A Global Guide to Designing Greener Goods*. Sheffield: Greenleaf Publishing Limited.

Muenchinger, K. (2016) Perceptions of Polymer Sustainability and the Relative Influence of Sustainable Design Strategies. In *Proceedings of 6th Kansei Engineering and Emotion Research International Conference*, August 31-Sept 2, Leeds, England.

White, P., Belletire, S., St. Pierre, L. (2013). *OkalaPractitioner: Integrating Ecological Design*. Phoenix.